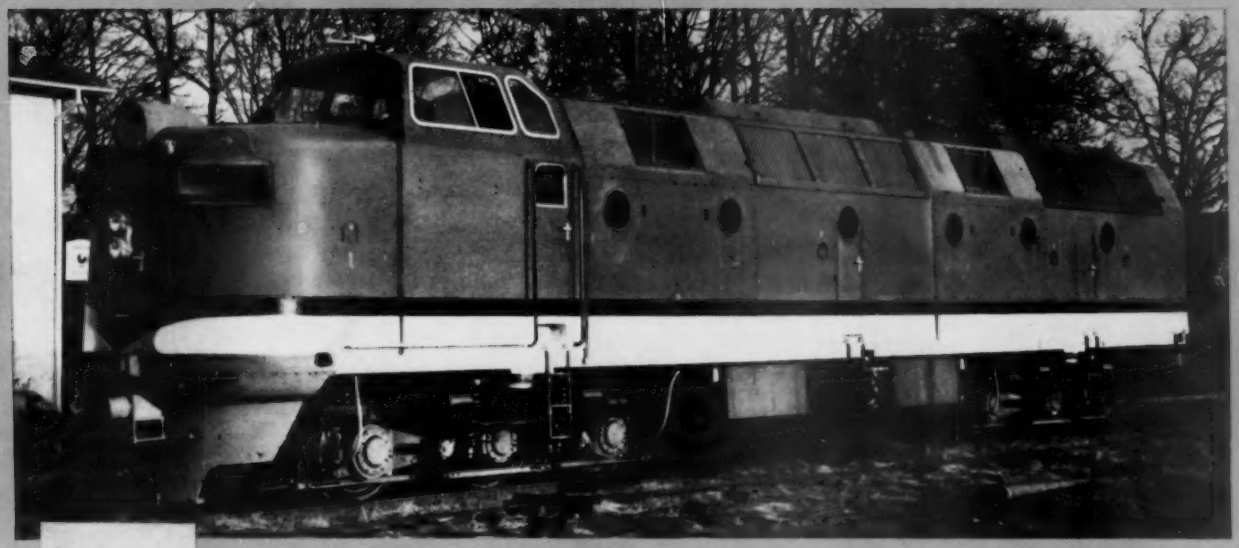
Coordinated Meetings

ALLIED EXHIBITS

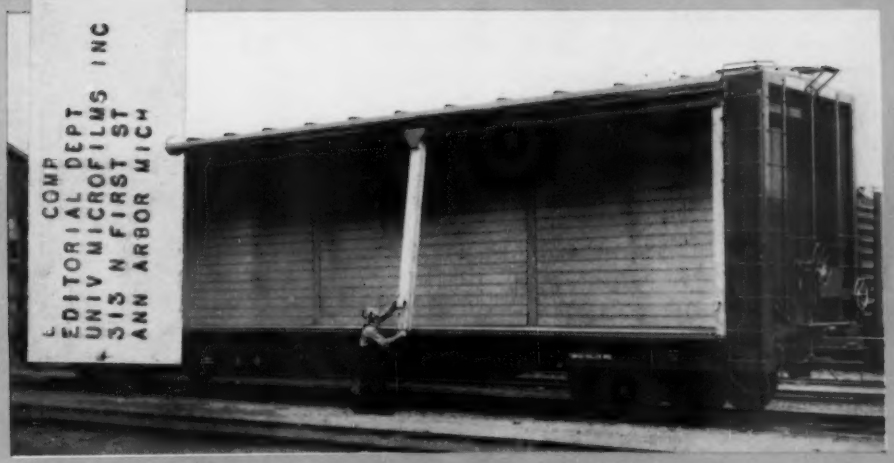
Chicago...September 10-13

PRODUCTS page 8 PROGRAMS page 38 EXHIBITORS page 42

RAILWAY
LOCOMOTIVES AND CARS
SEPTEMBER 1961



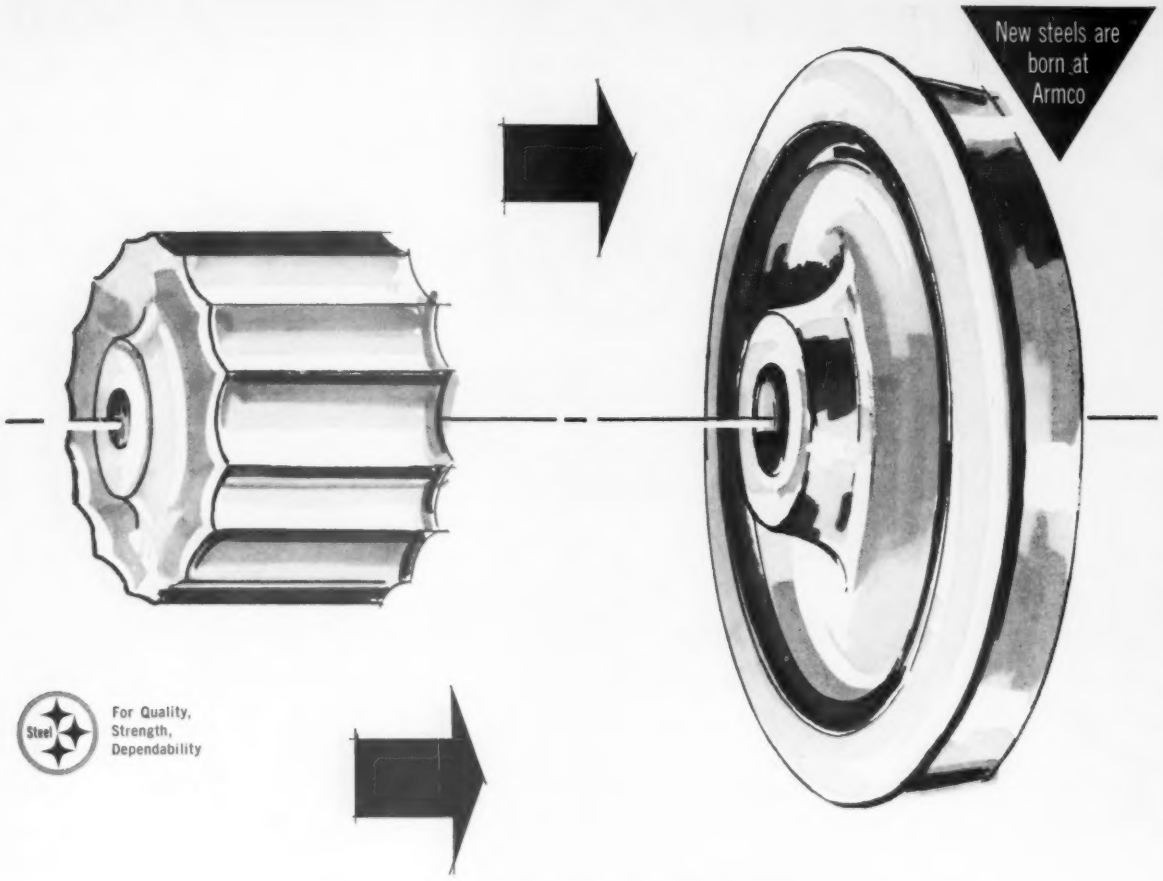
L
COMP
EDITORIAL DEPT
UNIV MICROFILMS INC
313 N FIRST ST
ANN ARBOR MICH



Diesel-Hydraulics To Be Operating Soon.....page 23

FOUNDED 1832
AMERICA'S OLDEST TRADE PAPER

Southern Acquiring All-Door Box Cars.....page 65



Steel For Quality, Strength, Dependability

IN ARMCO WHEELS

"Might Makes Right"

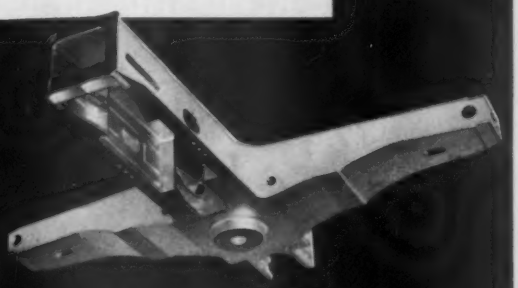
It takes thousands of tons of force to form an ingot slice of special steel into the precise shape of an Armco Wheel. In fact, the might of the squeezing, kneading forces in forging and rolling is your best assurance of wheel safety and durability because it completely eliminates coarse, cast structure in the finished wheel.

Our catalog, *Armco Wrought Steel Wheels,* gives you many cost-saving facts about these superior forged steel wheels. Write for a free copy. Price and delivery information are quickly available from your nearby Armco Sales Office. **Armco Division, Armco Steel Corporation, 2391 Curtis Street, Middletown, Ohio.**

ARMCO **Armco Division**

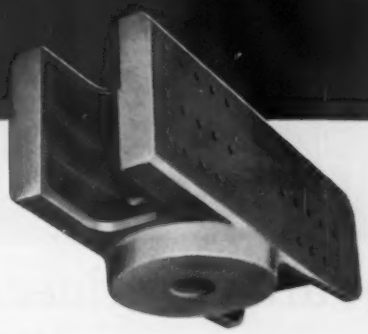
...TRADE MARK OF
DEPENDABILITY SINCE 1902

Type "E" Rigid Shank
Coupler and Yoke



One Piece
Underframe End

Buckeye Cast Steel COMPONENTS

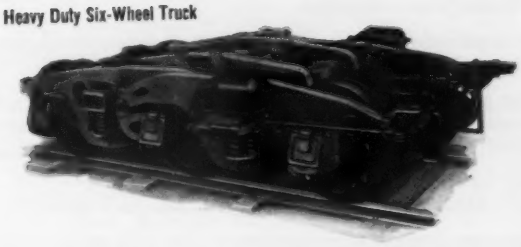


Bolster Center Filler with
Integral Center Plate

C-R (Cushion-Ride) Truck
with Roller Bearings

Heavy Duty Eight-Wheel Truck

Heavy Duty Six-Wheel Truck



FOR COMPLETE INFORMATION . . . CALL or WRITE
Refer Adv. No. 11886

BACKED BY THE REPUTATION OF CALLAWAY MILLS...

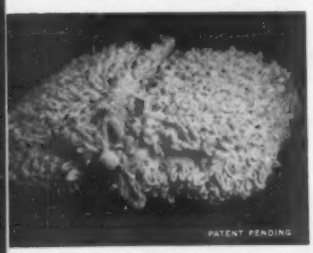
WIKIT*

journal lubricators

quality-engineered for lasting dependability

AAR CONDITIONALLY APPROVED

WIKIT Journal Lubricators are designed and manufactured by Callaway Products, Inc., with a single objective —*to provide effective lubrication continuously under all operating and weather conditions.* To this end, all materials used in WIKIT lubricators are the highest quality, selected for long life, efficient wicking properties, and ease of renovation. Every WIKIT meets the high standards of Callaway Quality—proved by top performance records.



Economical to use because of WIKIT's moderate initial cost—easy, inexpensive renovation.

Center wick design provides shortest and most direct oil flow to journal. LOOP-TITE* jacket, woven by a special process, has interlocking loop pile with high tensile strength. Over-all design assures rapid, multi-feed wicking throughout lubricator.

ABSORBenized* treatment of jacket provides greatest wicking and absorbency—a special process featured in famous Callaway bath towels.

WIKIT #11 retains 7 pints of oil after saturation and draining 3 hours. Cores are best quality neoprene foam—resistant to oil, moisture, heat, compression set. Strong nylon tape secures nonferrous pull handle. Insert either end first, either side up!

*Registered Trademarks

CALLAWAY PRODUCTS, INC., Railway Products Division, La Grange, Georgia

Representatives in New York • Philadelphia • Cleveland • Chicago • St. Paul • San Francisco • San Antonio • Louisville • Montreal

CALLAWAY MILLS

RAILWAY
LOCO-
MOTIVES
AND
CARS

America's Oldest Trade Paper
September, 1961—Vol. 135, No. 9
Editorial and Executive Offices:
30 Church Street, New York 7

C. L. Combes
Editor, New York

F. N. Houser
Managing Editor, New York

Norman E. Gillespie
Western Editor, Chicago

A. G. Oehler
Consulting Editor, New York

Lillian D. Milner
Editorial Assistant, New York

•

Robert G. Lewis
Publisher, New York

Duane C. Salisbury
Director of Sales, New York

Joseph J. Menkes
Production Manager, New York

Elsie M. Pritchett
Manager, Contract Department

•

BRANCH OFFICES: 79 West Monroe st., Chicago 3; 1081 National Press Bldg., Washington 4, D. C.; 1501 Euclid ave., Cleveland 15; 1151 W. 6th st., Los Angeles 17; Suite 203, Carlton House, Pittsburgh 19; Terminal Sales Bldg., Portland 5, Ore.; 916 Kearney st., San Francisco 11; 3908 Lemmon ave., Dallas 19, Tex.; J. S. Crane, 22 Eighth st., N.E., Atlanta, Ga.

FOREIGN REPRESENTATIVES: United International Industrial Press, Ltd., 38 Victoria st., London, S.W. 1, England; Max F. Holsinger, International Railway Journal, Huttenstrasse 17, am Ernst-Reuter-Platz, Dusseldorf, Germany.

•

Railway Locomotives and Cars is a member of the Audit Bureau of Circulation (A.B.C.) and is indexed by the Engineering Index Service. Printed in U.S.A.

Published monthly by the Simmons-Boardman Publishing Corporation, 10 W. 23rd St., Bayonne, N. J., with editorial and executive offices at 30 Church St., New York 7. James G. Lyne, Chairman of the Board; Arthur J. McGinnis, President and Treasurer; Duane C. Salisbury, Exec. Vice Pres.; George Dusenbury, Vice-Pres. and Editorial and Promotional Director.

•

CIRCULATION DEPARTMENT: **Robert H. Lash, Director of Circulation, 30 Church st., New York 7.** Re-entry of second class privileges authorized at Newark, N. J., with additional second class privileges, Bristol, Conn. Subscription price to railroad employees only in U.S., possessions, Canada, and Mexico, $2.00 one year, $3.00 two years, payable in advance and postage free. Subscription price to railroad employees elsewhere, $8 per year. Single copies, 75¢. Address all subscriptions and correspondence concerning them to: Subscription Department, Railway Locomotives and Cars, Emmett st., Bristol, Conn. Changes of address should reach us three weeks in advance of the next issue date. Send old address with the new, enclosing, if possible, your address label. The Post Office will not forward copies unless you provide extra postage. Duplicate copies cannot be sent.

POSTMASTER—SEND FORM 3579 TO EMMETT ST., BRISTOL, CONN.

REPORT FOR SEPTEMBER

ICC OK's Tank Car Without Running Boards

Construction of one type of tank car without side running boards will be permissible under a new Safety Appliance Standard recently published by the ICC. Tank cars without underframes need not have running boards, according to a modification of the U. S. Safety Appliance Standards effective October 1.

The Commission at various times over the past four years has considered and acted on the petition of the Union Tank Car Co. for the elimination of running boards. Following the first hearing, it modified Standards in July 1959 to permit operation of tank cars without running boards. In February 1960, this order was rescinded, meaning that the arrangement would be illegal (RL&C, Nov. 1960, p 8). In March 1961, Union Tank requested reconsideration of its case, and the latest hearings have resulted in the re-establishment of the arrangement as a safety appliance standard.

Previously, the Safety Appliance Standards have required side running boards on three basic types of tank cars—cars with side platforms; cars without side sills or with short side sills and end platforms; and cars without end sills. No standards have been prescribed for the type without center sills, because this is a new arrangement which UTL had just developed when its original petition was filed in August 1957.

Although Union Tank had first proposed complete elimination of the side running boards, it amended its petition after the first hearing to call for the installation of a handhold along the side of the car in the same relative location as the low running board. This handhold could be grasped by trainmen on the ground when bleeding air to release sticking brakes and was intended to overcome union objections to complete elimination of the running board. The Commission did point out that the three different arrangements now allowed do not have a standard running board height; that some existing cars have nothing on which a trainman can brace himself. The required side railing must be 1¼-in. pipe with 2½ in. clearance.

According to the Commission, the sole issue in the latest proceeding has been to determine if the petitioner's tank car without side running boards is in the public interest. "Today, trainmen seldom traverse the tops of cars in road service, but may do so in emergency," the Commission reported. "In switching or yard service, they traverse cars while running at slow speed, but generally descend to the ground when necessary to go from end to end of a car or cut of cars. While there is no prohibition against trainmen traversing the tops of cars or using running boards, railroads as a rule do not require them to do so and, in fact, discourage such action. It is practically impossible to traverse some cars, such as gondolas or hoppers, when empty, or when these cars are loaded with scrap, coal, or gravel that does not afford stable footing.

"We are impressed," the Commission continued, "by the fact that nearly half of all freight cars—such as hopper, gondola, and flat cars—owned by Class I railroads in the United States are not equipped with running boards and are not required to be so equipped by the Safety Appliance Standards. This strongly indicates that running boards, at least on certain type cars, are not needed."

Railroad Research To Be Seminar Topic

To guide research toward the devices, materials and procedures which will improve railroad operations and equipment, the AAR and the Armour Research Foundation are sponsoring a two-day Research Seminar in Chicago on November 2 and 3.

(Continued on page 7)

TIME SAVING IDEAS FOR SEPTEMBER

D&RGW and SP Diesel Hydraulics in Service Soon 23
GATC Propane Reefers for Meat Service 28
Programs of Coordinated Mechanical Associations 38
Exhibits of Allied Railway Supply Association 42
PRR Brake Shop Overhauls 200 AB Valves Daily 52
Southern Orders All-Door Box Cars 65
Finger of Suspicion (Diesel Maintainer's Notebook) 74

DEPARTMENTS

Personal Mention 7
What's New in Equipment 8
Editorials 17
Supply Trade Notes 86

Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES
Nalco CHEMICALS
Nalco SERVICES

Nalco® MOLY STICK

MOLYBDENUM DISULFIDE

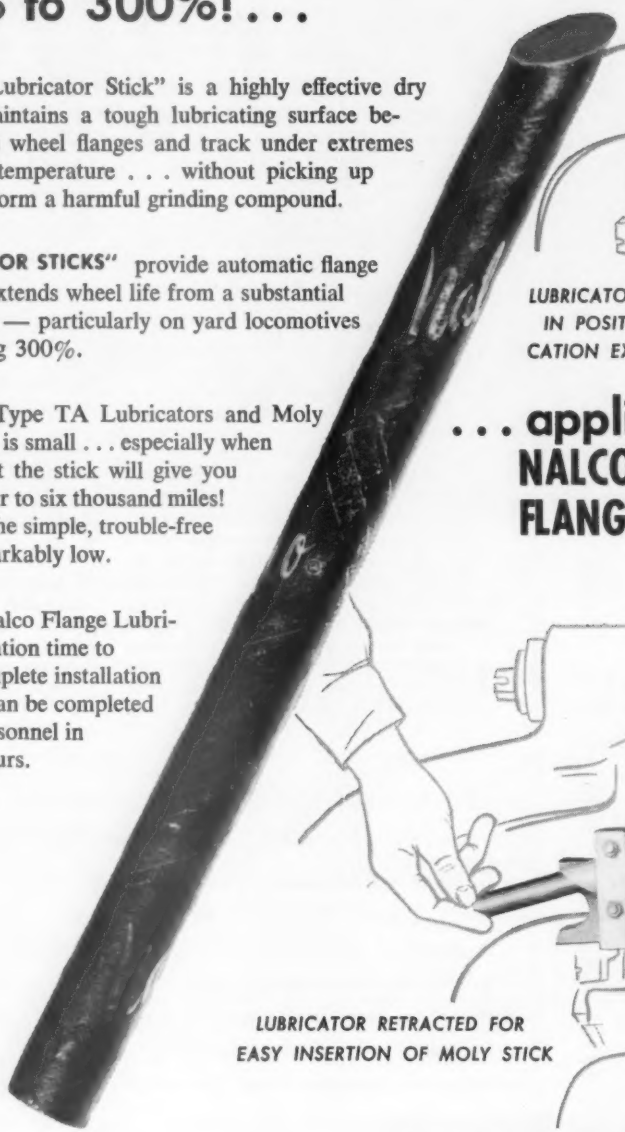
dry lubricant extends locomotive and car wheel life 30% to 300%! . . .

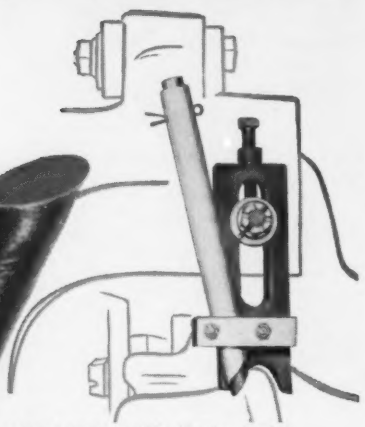
NALCO "Moly Lubricator Stick" is a highly effective dry lubricant that maintains a tough lubricating surface between locomotive wheel flanges and track under extremes of pressure and temperature . . . without picking up dirt and sand to form a harmful grinding compound.

"MOLY LUBRICATOR STICKS" provide automatic flange lubrication that extends wheel life from a substantial 30% to as much — particularly on yard locomotives — as a whopping 300%.

COST of Nalco Type TA Lubricators and Moly Lubricator Sticks is small . . . especially when you consider that the stick will give you protection for four to six thousand miles! Maintenance of the simple, trouble-free lubricator is remarkably low.

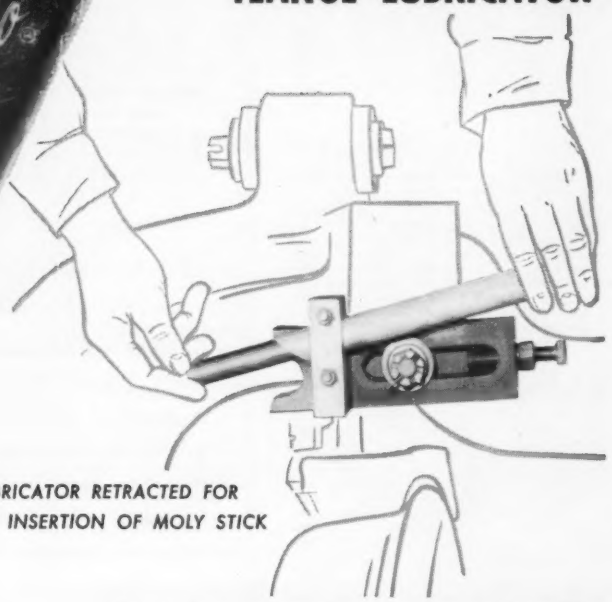
DESIGN of the Nalco Flange Lubricator cuts installation time to a minimum. Complete installation on a diesel unit can be completed by your shop personnel in less than four hours.





LUBRICATOR AND MOLY STICK IN POSITION, PUTTING LUBRICATION EXACTLY WHERE NEEDED

. . . applied with NALCO TYPE TA FLANGE LUBRICATOR



LUBRICATOR RETRACTED FOR EASY INSERTION OF MOLY STICK

PRI MEMBER

Nalco ®. . . Serving Industry through Practical Applied Science

NALCO CHEMICAL COMPANY

6216 West 66th Place • Chicago 38, Illinois

Subsidiaries in England, Italy, Mexico, Spain, Venezuela and West Germany

In Canada: Alchem Limited, Burlington, Ontario

(Continued from page 5)

According to W. M. Keller, AAR vice-president (research), the program differs from other research meetings held recently in that it will indicate the problems which should be the targets of railroad and supplier research.

New operating concepts, new designs, and raw materials will be discussed along with the late developments in laboratory procedures. The sessions will be held in the Sheraton Towers Hotel in Chicago, with Mr. Keller acting as program chairman.

The morning session on Thursday, November 2, will define the needs of the industry in the following areas:

- Equipment—P. V. Garin, manager mechanical engineering and research, SP.
- Right-of-way—R. H. Beeder, chief engineer (system), Santa Fe.
- Signaling—A. L. Essman, chief signal engineer (system), Burlington.
- Communications—T. W. Wigton, general superintendent communications, Burlington.
- Prevention of Damage to Shipments—O. J. Wullstein, general claims agent, Union Pacific.

The luncheon speaker will be H. A. Leedy, director of the Armour Research Foundation, who will speak on "Results of Industry Association Research in the United States." The afternoon session on November 2 will discuss solutions for railroad problems through research in the following areas:

- New Materials—C. R. Simcoe, supervisor, Alloy Development Section, Metals and Ceramics Research Division, Armour Research Foundation.
- New Methods—D. C. Turnbull, Jr., vice-president, research and development, Baltimore & Ohio.
- New Designs—N. A. Weil, director, Mechanics Research, Armour Research Foundation.
- New Concepts of Operations—J. W. Barriger, president, Pittsburgh & Lake Erie.

Laboratory utilization will be the topic of the morning session on November 3. The following subjects will be discussed:

- Compatibility of Laboratory with Actual Service Conditions—William Van Der Sluys, associate director, research and development, Pullman-Standard.
- Accelerating Data Development by Laboratory Methods—G. M. Magee, director engineering research, AAR.
- Applications of Computers to Railroad Research Problems—A. K. Hawkes, supervisor, Computer Applications and Operations Research, Electronics Research Division, Armour Research Foundation.
- Laboratory Organization—H. H. Melzer, chief engineer tests, Milwaukee.

The afternoon session on the second day will be devoted to Special Problems and Summary as follows:

- Balance Between Fundamentally New Mechanisms or Elimination of Inherent Weaknesses in Existing Mechanisms—A. V. Dasburg, manager yard and terminal development, General Railway Signal Co.
- Possible New Sources of Locomotive Power—R. M. Coultas, manager domestic locomotive sales, General Electric Co.
- Evaluation and Critique of the Seminar—W. M. Keller, vice-president (research) AAR.

Orders and Inquiries for New Equipment

Placed Since Closing of August Issue

Freight-Car Orders

CANADIAN NATIONAL. *Montreal Locomotive Works:* 40 70-ton steel covered hopper cars; 10 aluminum covered tank cars; 25 double-deck flat cars. *Canadian Car:* 150 box. For October-November delivery.

CANADIAN PACIFIC. *Marine Industries:* 100 70-ton covered hoppers.

CORN PRODUCTS. *General American:* 7 covered hopper cars.

DETROIT, TOLEDO & IRONTON. *American Car & Fdry.:* 75 covered hoppers. Estimated cost, $900,000. Immediate delivery.

DOW CHEMICALS. *General American:* 10 covered hopper cars.

GENERAL AMERICAN. *Company shops:* 75 30,300-gal, 66-ft long tank cars.

KATY.—*American Car & Fdry.:* 10 70-ton covered hoppers equipped with roller bearings and pneumatic outlets. Immediate delivery.

KOPPERS CO. *General American:* 2 covered hopper cars.

MILWAUKEE. *Strick Trailer:* 25 piggyback flat cars and 100 Flexi-Van trailers. Lease arrangement. Deliveries begun Sept. 1.

NORFOLK & WESTERN. *American Car & Fdry.:* 90 box cars equipped with DF loaders; 10 box cars with hydraulic cushion underframes. Cost, over $1,250,000. Deliveries scheduled to begin in October. *Co. shops:* 100 70-ton, 30-cord-capacity pulpwood cars. Approx. cost, $1,000,000.

NORTH AMERICAN CAR. 125 automobile rack cars for NITX pool. 50 ACF 89-ft Low Levels and 50 P-S 89-ft Lo-Deks to be assigned to New York Central, and 25 P-S 85-ft flats to be assigned to Denver & Rio Grande Western.

SOUTHERN PACIFIC. *Bethlehem Steel:* 50 flat cars. Immediate delivery. *General American:* 100 piggyback flats. For October delivery. *Baldwin-Lima-Hamilton:* 40 86-ton gondola cars for handling wet copper concentrate.

Passenger-Car Orders

SOUTHERN PACIFIC. *Pacific Car & Fdry.:* 25 baggage cars. For delivery by Jan. 1.

Notes and Inquiries

General American built 100 tank cars during July, including 21 30,300-gal, nine 20,500-gal, and 18 20,000-gal units. Remainder ranged between 16,000-gal and 4,000 gal capacity.

Philadelphia Passenger Service Improvement Corp. has received a bid from the Budd Co. for the construction of stainless-steel commuter cars which PSIC plans to acquire and lease to the Pennsylvania and Reading. Budd offered to build 24 stainless-steel cars for $6,186,500, or 54 cars for $13,518,900. Bids were not received from other builders. Opening of bids was originally scheduled for July 5 but was delayed at the request of PRR and Reading, which wanted to draw up alternate specifications.

Southern asking for bids for construction of 200 4,800-cu ft, 100-ton aluminum covered hopper cars. Delivery to begin within 60 days at a rate of 40 cars a week.

Trailer Train directors have authorized purchase of 600 cars, including piggyback and cars designed for auto-rack service. For third quarter delivery.

ASME Moves to New Headquarters

The American Society of Mechanical Engineers has moved from 29 West 39th st., New York, to the recently completed United Engineering Center at 345 East 4th st., New York, where all New York facilities of the Engineering Societies are being centered. The former Engineering Societies Building, where the ASME had been housed for 55 years, was opened in 1880.

Personal Mention

John G. German
MP

D. F. Marston
GN

Akron, Canton & Youngstown.—*Akron, Ohio:* H. L. BULLOCK, superintendent motive power, appointed superintendent of motive power and cars, with jurisdiction over all car department operations.

Elgin, Joliet, & Eastern.—*Gary, Ind.:* CHARLES H. COOK, division general car foreman, has assumed direct supervision and responsibilities of car department, Gary division, succeeding CLARENCE C. LARSON, retired. Position of assistant superintendent car department abolished.

Great Northern.—*St. Paul, Minn.:* DONALD F. MARSTON, appointed superintendent of motive power, succeeding JOHN G. GERMAN, resigned. RICHARD G. TAUSCH appointed assistant to chief mechanical officer, succeeding Mr. Marston. *Hillyard, Wash.:* LAWRENCE R. SEAHOLM appointed shop superintendent, succeeding Mr. Tausch. *Havre, Mont.:* KENNETH W. BATCHELLER appointed shop superintendent, succeeding Mr. Seaholm. *Great Falls, Mont.:* EUGENE C. COAN appointed master mechanic, succeeding Mr. Batcheller. Mr. Coan formerly mechanical assistant, Kalispell division.

Missouri Pacific.—*St. Louis, Mo.:* JOHN G. GERMAN appointed chief mechanical officer, succeeding L. RAY CHRISTY, retired. Mr. German formerly superintendent of motive power, Great Northern.

Mr. German, a graduate of Case Institute of Technology (B.S. in mechanical engineering), began railroad career in 1943 as assistant to the master mechanic, Great Northern, at Spokane, Wash. Subsequently served as traveling engineer; master mechanic; assistant to mechanical officer, and, late in 1958, superintendent of motive power.

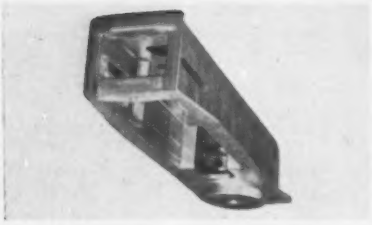
Norfolk & Western.—*Bluefield, W. Va.:* RUSSELL R. MCDANIEL appointed master mechanic, Pocahontas division, succeeding WALLACE M. TUCKER, deceased. *Norfolk, Va.:* WALTER A. GRIGG appointed master mechanic, Norfolk division, succeeding Mr. McDaniel. *Roanoke, Va.:* EDWIN H. WERNER, assistant electrical engineer, appointed electrical engineer succeeding Mr. Grigg. RUSSELL S. WHITE, electrical inspector, named mechanical inspector.

Northern Pacific.—*St. Paul, Minn.:* J. D. KROHNE appointed assistant to mechanical

(Continued on page 86)

LOCOMOTIVES AND CARS **WHAT'S NEW** IN EQUIPMENT

Products of Exhibitors—Allied Railway Supply Association
(Not previously described in Railway Locomotives and Cars)



Underframe End Castings

Higher strength and improved service, it is said, are obtained with cast-steel underframe ends. The basic type, applicable to box and refrigerator cars, combines the draft arm and body bolster. The draft-arm casting, the latest model designed for hopper cars (illustrated), has been increasingly popular during the past year. Both types are applicable to new or rebuilt cars. *Buckeye Steel Castings Co., Dept. RLC, 2211 Parsons ave., Columbus 7, Ohio.*

Laminated Car Decking

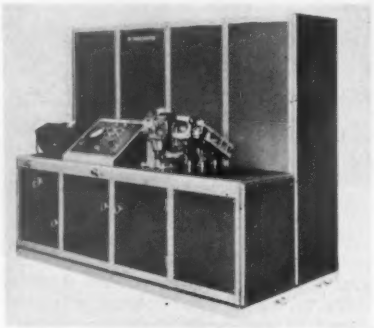
According to the manufacturer, fork lift trucks, for about two years, have been handling loads up to 26,000 lb per wheel over Doweloc edge-grain laminated hardwood car decking with no appreciable wear or breakdown. The panels can be applied either in only the doorway area or through the full deck. They are custom manufactured to exact requirements in width and length and are so machined as to permit immediate installation without reworking in the wood mill. Panels are sanded on both faces to make smooth decks and are treated to prevent expansion, contraction, and rot. Installation labor is said to be reduced up to 50%. *Doweloc Div., D. B. Frampton & Co., Dept. RLC, Huntington Bank Bldg., Columbus 15, Ohio.*

Detergent Cleaner

Nuvat, a non-scumming, heavy-duty chelated soak cleaner based on synthetic-type detergents, is formulated for vat cleaning of ferrous metals. It can be used for copper, brass, nickel, and magnesium, as well as for steel and cast iron. It can be used at low concentrations and over a wide range of temperatures even under heavy soil loads for loosening and removing grease, encrusted carbon deposits, and paint. The cleaner is non-dusty and non-caking, dissolves readily and completely, develops no disagreeable odors or fumes even at boiling temperatures, contains no cyanides, chromates or cresols, and rinses freely regardless of water hardness. *Railroad Dept., J. B. Ford Div., Wyandotte Chemicals Corp. Dept. RLC, Wyandotte, Mich.*

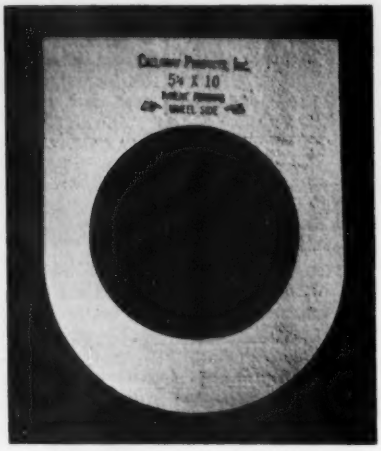
Shop Truck

The Super 7 Cary-Lift can reach across cars and flat bed trucks; is capable of making free lifts of 13 ft 1 in., and has a lifting capacity of 7,250 lb. It features a hydraulic forward reach of 4 ft 6 in. at ground level and the power steering, three-point hydraulic brakes and two-speed powershift transmission. Quick change attachments include forks, dozer blade, 1¼-yd bucket and crane boom. *Pettibone Mulliken Corp., Dept. RLC, 4700 West Division st., Chicago 51.*



Automated AB Tester

The Wabcomatic test console for automated testing of AB valves is programmed by code-punched tape to test valve portions according to test procedures previously conducted manually. Tests deal with pressures and flow within specified time limits. Automated procedure merely requires the operator to place the portion on holding studs of the console, press the clamping button, and then the program-start button. As the program runs through, test results are automatically printed in sequence on pressure-sensitive tape—in black to indicate pass; in red, to indicate fail. On completion, the tape is detached from the printer and affixed to the portion which is placed on the pass or rework conveyor. Average maximum output of the console is rated at 80 portions per day, compared with 25 for a manual rack. As the test sequence lasts approximately 5½ min., one man can easily operate adjacent consoles to test 300 portions per day. Automated testing insures valid testing as it eliminates human tendencies favoring marginal acceptance. Savings are estimated to produce an annual return of up to 40% on the investment. *Westinghouse Air Brake Co., Air Brake Division, Dept. RLC, Wilmerding, Pa.*



Dust Guard

The Callaway dust guard has tough, resilient, oil-impervious urethane outer surfaces and a urethane foam core. Oil collected from the axle surface is returned to the journal box through a relief in the dust guard side to minimize oil leakage. The guard, it is said, functions without tearing or distortion after impacts and is unaffected by ambient temperature extremes. *Callaway Products, Inc., Railway Products Div., 295 Fifth ave., New York 16.*

Wheel Machining Tools

A car-wheel boring tool (above) using standard throw-away inserts makes it possible to eliminate grinding costs. The tool reduces changing time and cuts down time for wheel-boring machines. Solid-carbide, tapered-side inserts for wheel-truing cutters

(Continued on page 10)

Lets one man do the work of three!

The built-in hypocycloid gear is the power secret! Free to follow the eccentric crankshaft, but not free to rotate itself, it produces a 6:1 reduction ratio.

*Patent Pending

NEW! Wine Power Geared* Discharge Gate

EVEN UNDER A 70-TON LOAD one man can open this new gate. Accurately machined mating surfaces provide bind-free operation and a tighter seal. No more sledging or car damage in attempts to open "frozen" hopper doors. Electric steel castings eliminate distortion.

PRECISION-MESHED GEARS without costly machining! Amazingly accurate shell molding process helps keep unit competitively priced despite *Power-Gear* features. Rack-and-pinion principle assures parallel operation without side binding. All bearing surfaces are lubricated with Moly Disulfide.

COMPLETELY PREASSEMBLED for easy installation, ready for welding. No further fitting, no extra parts required during assembly of car. 13x24" opening fits most standard chutes. Interchangeable with most present gates; equipped with standard boot groove. Conforms to all recognized unloading devices. Now in service on six major railroads and a car leasing company.

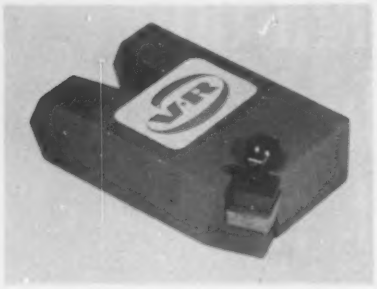
A TRIAL APPLICATION WILL CONVINCE YOU! Complete specifications and application data on request.

WINE
Railway Appliances

See this product at
BOOTH 235
at the ALLIED SHOW

WINE Railway Appliances by UNITCAST CORPORATION • TOLEDO 9, OHIO

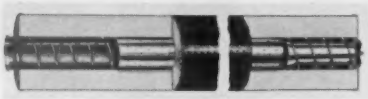
WHAT'S NEW IN EQUIPMENT—*(Continued from page 8)*



are also available. By using solid carbide inserts instead of the "brazed on" type, brazing strains are eliminated; inserts remain dimensionally stable under high cutting heat, and are easy to remove from the cutter body if damaged. *Vasacoloy-Ramet Corp., Dept. RLC, Waukegan, Ill.*

Lading Anchor Bar

A continuous bar anchor, applicable to steel box-car linings, is welded to Z-bar posts between the lining sections. The patented tongue design of the bar anchor speeds application and removal of steel strapping. The bar, available in varied lengths, may have anchors spaced as specified. No shimming is required; plate and anchor are flush with plywood lining. *MacLean-Fogg Lock Nut Co., Dept. RLC, 5535 N. Wolcott ave., Chicago 40.*

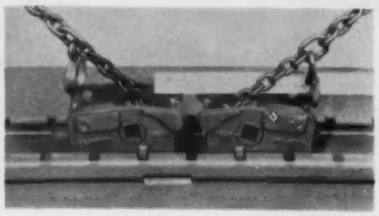


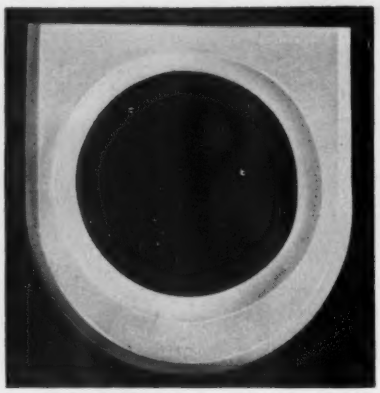
Lube Oil Filter

This pleated-paper filter cartridge for diesel locomotives is said to provide positive filtration, high flow characteristics, large filtering capacity, and controlled porosity. It is a full-flow, cageless type. The filter paper is corrugated as well as pleated. Shell stock has high density. End caps are tin plate. The perforated center tube encloses a 12-gage reinforcing spring. At the top is a Hycar spacer grommet. *M & J Diesel Locomotive Filter Corp., Dept. RLC, 30 West Monroe st., Chicago 3.*

Auto Tie-Down

An automatic safety latch for a more positive lock under impact and vibration has been provided on the improved Auto-Tie, a device for multi-level rail shipment of automobiles. The winch drum design and method of attaching the chain allows a quick change of chain without removing the winch from the anchor channel. The drum gives an 8-in. take-up for one full turn, eliminating chain jamming. Maximum load capacity requires winch anchoring at 3-in. increments for the full length of the car. The winches can be moved to any desired position without removing and reapplying bolts. *Brandon Equipment Co., Dept. RLC, 332 South Michigan ave., Chicago 4.*





Dust Guard

The Frost dust guard, injection molded of high-density polyethylene, is said to resist cold and not shatter at minus 45 deg F. It resists heat and maintains its characteristics at excessive temperatures, and its low porosity makes it practically impervious to water and oil at temperatures up to 175 deg F. *Frost Railway Supply Co., Dept. RLC, 2920 East Jefferson ave., Detroit 7, Mich.*

Bulkhead Type Flat Car for Plasterboard

The rolled structural steel beams and castings employed in the underframe of a new bulkhead flat car are said to offer high strength and low maintenance in the critical bolster and draft sill areas. Such cars are now in service carrying plasterboard.

Also available is an 85-ft piggyback car incorporating a long-travel, high-capacity cushion underframe which permits the solid tie-down of trailers and containers. Impact forces usually absorbed by the conventional tie-downs are cushioned by the action of the underframe *Bethlehem Steel Co., Dept. RLC, Bethlehem, Pa.*

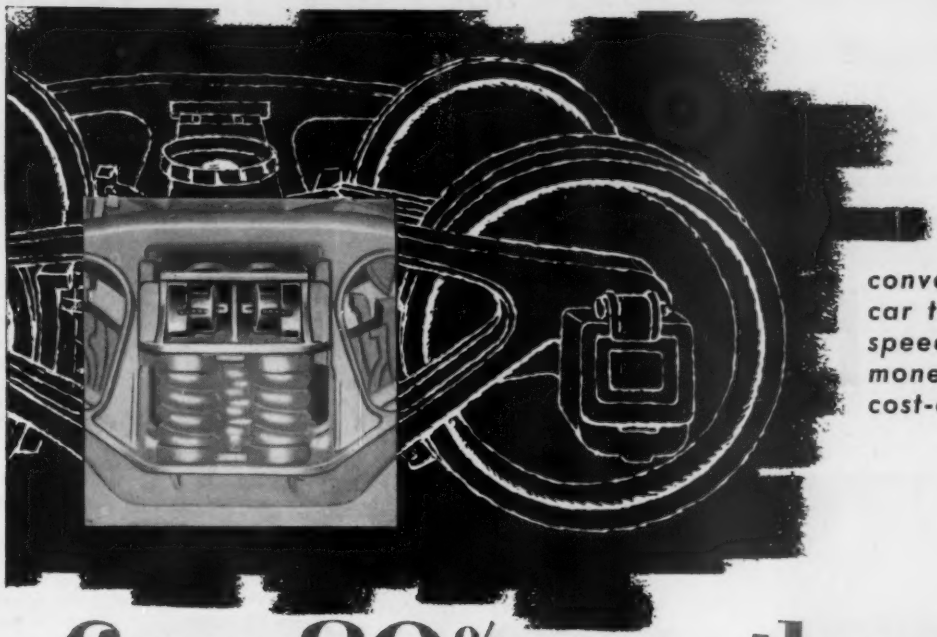
Coating for Cars

A two-coat, high-gloss finish can be obtained in 4 to 6 hr with the Tuff Fast-Dry enamel system. The one-to-one component ratio of the Tuff epoxy coating is said to provide easier mixing and application than present epoxy systems. It has high corrosion resistance and improved gloss and color retention. Both coatings are available as complete systems with rust-inhibitive primers. *Archer-Daniels-Midland Co., Dept. RLC, 700 Investors Bldg., Minneapolis 2, Minn.*

Shop Carrier

A new type Rail-Roader has been designed for changing car wheels, couplers, etc. It is built around the 8-ton design and features full reversing transmission for equal speeds forward-reverse for track operation. Mechanically operated dollies front and rear

(Continued on page 13)



convert old freight car trucks to high speed service this money-saving, cost-cutting way!

Save 80% over the cost of new Freight Car Trucks

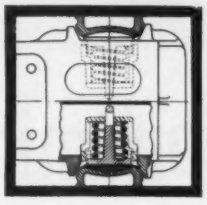
with the NEW HOLLAND RIDE STABILIZER RS-2

There's no need to let those serviceable old Freight Car Trucks be limited to slow speed service when you can convert them to profitable operation at a fraction of the cost of new trucks... The Holland Ride Stabilizer RS-2 has proven to give the same high-speed, lading-protecting, easy-riding characteristics you get in new, costly freight trucks.

You can convert any bolster of A. A. R. approved design and stabilize the ride laterally, vertically and longitudinally... The direct spring loaded control system of the Holland RS-2 **does not** cause uneven wear of the Journal Bearing when abnormal forces are exerted. Wedge made pressures just **do not** occur. Installation of the RS-2 components is unusually simple... And Holland Engineers will give you on-the-job assistance.

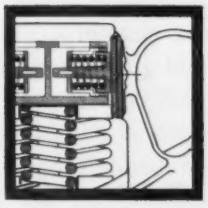
Write or call for the new Tell-All Bulletin RS-2.

NEW

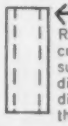


New Large control spring for full face pressure, longer life.

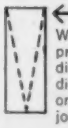
NEW



New Center Retention Means for simplified assembling and dismantling.



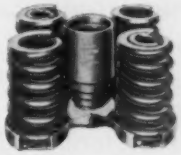
RS-2 Spring cushioned pressures do not disturb load distribution on the journal.



Wedge made pressures disturb load distribution on the journal.

Holland Volute Snubber Springs

Either 2½" or 1⅜" Spring Travel.



STYLE E-2 Volute Snubber Spring, 2½" Travel in 50 Ton Group.

Upgrades ride by introducing an unusually smooth snubbing action with an exceptionally high load carrying capacity. Holland's principle of utilizing the sliding action of telescoping radially compressed coils with ample friction area eliminates the "bombarding" problem. 518R

HOLLAND COMPANY

332 S. MICHIGAN AVE. • CHICAGO 4, ILLINOIS

for the finest in freight car truck controls!

New

Liquid Cleaner

OAKITE

202

Cleans everything...economically

A new, "use it everywhere" liquid detergent —Oakite 202—now offers the greatest convenience EVER in cleaning. It goes into water solution quickly without waste... without fire hazard. You spray, mop or brush it on.

Oakite 202 forms a rich, sudsy solution that's packed with cleaning power. It knifes through road grime, grease, scuff marks—even dried-on bug deposits. Use it wherever you have a tough cleaning problem. It does a wonderful job washing diesel interiors and exteriors. And it certainly does a job on passenger car interiors. It lightens oily shop floors, brightens greasy equipment. It's safe for any surface, including aluminum. It dries down without streaking.

But here's the BIG pay-off—Oakite 202, in mild solutions, *out-performs* stronger solutions of other cleaners. This makes 202 a most economical *all-purpose* material.

Ask your local Oakite man for a convincing see-for-yourself demonstration without obligation. Or send for free bulletin to Oakite Products, Inc., 46 Rector Street, New York 6, N. Y.

OAKITE

SCIENCE

over 50 *Est. 1909*

years' leadership in industrial cleaning

WHAT'S NEW IN EQUIPMENT—(Continued from page 10)

enable the vehicle to travel over highway or rails. The carrier is equipped with a four-man crew compartment; 50-ton electrically driven jacks; a 6,000-lb capacity hydraulic crane; a Power-Pak unit for welding and cutting, and miscellaneous equipment. *Schield Bantam, Dept. RLC, Waverly, Iowa.*

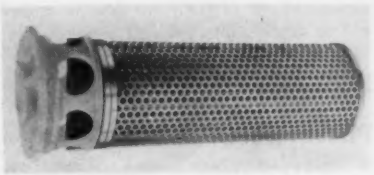
Nailable Steel Flooring

Designed to support the heaviest of lift-truck wheel loads, the Tri-Rib flooring provides nailing grooves on 3 in. centers. The grooves are formed by the self-contained reinforcing ribs which are said to be so closely spaced that additional reinforcement is unnecessary below this flooring. Alternate ribs are lapped, further increasing floor strength. Also available is a rib filling material which will not adhere to lading resting on it and which prevents debris from filling nailing grooves. *Transportation Specialties Co., Dept. RLC, 80 East Jackson Blvd., Chicago 4.*

Steel Wheels

To facilitate the use of piggyback cars on routes with existing low clearance tunnels, a 28-in. one-wear wheel has been added to the Griffin line of pressure-poured EQS steel wheels. To comply with the new AAR

regulation, a 36-in. one- and two-wear wheel has also been added for use on cars with over 70-ton loads. *Griffin Wheel Co., Dept. RLC, 445 North Sacramento Blvd., Chicago 12.*

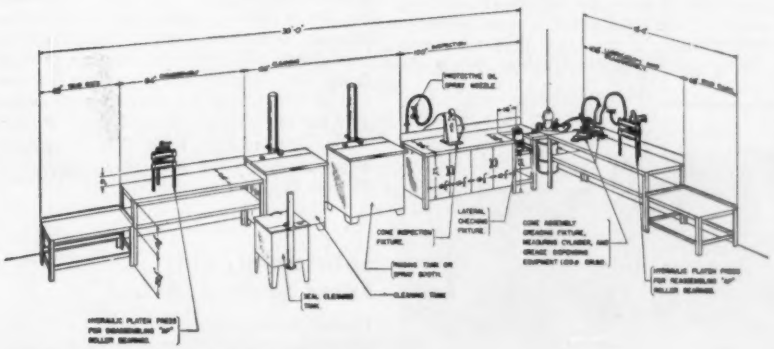


Oil Strainers

The PC oil strainer cartridge for EMD 567 engines fits existing strainer housings without modification. By crimping the strainer screen, filter area has been doubled while minimizing oil flow resistance. Although finer mesh screen is used, the total "open area" of the strainer is actually greater. Screens are protected by perforated metal shields so the new strainer can be handled during cleaning without risk of being damaged. The PC strainer is attached to the existing casting head by a single T-bolt which is locked in place with a slotted nut and cotter; installation takes 10 to 20 min. Two types are available—the lube oil strainer with 40-60 mesh screen and the scavenger pump strainer with 8 coarse mesh screen. *Farr Co., Dept RLC, P. O. Box 90187, Airport Sta, Los Angeles 45.*

Journal Lubricator

A specially formulated acrylonitrile foam rubber (Nalur) is the core of the Magpad lubricator. The rubber, said to be highly resilient, with low oil swell characteristics, resists compression set at high temperatures. The outer cover of the lubricator is a heavy chenille, lock-stitched to withstand a 10-lb minimum pull on tufts. End closures are cotton belting. Internal wicking is provided by 25-ply candlewick routed through ½-in. vertical orifices which give unrestricted flow of oil. *Magnus Metal Corp., Dept. RLC, 111 Broadway, New York 6.*



Roller Bearing Maintenance Shop

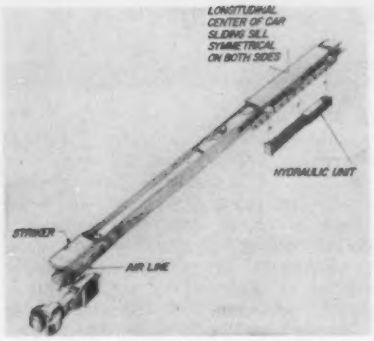
A bench layout, designed to disassemble, clean, inspect, lubricate and reassemble railway bearings in the shortest possible time and with a minimum of difficulty, has been recommended by bearing manufacturers and the AAR. The layout can be modified to suit the requirements of any shop with regard to the number of bearings to be serviced. While this layout is set up for a flow of bearings from one end to another, shops with less demand for bearing maintenance could modify the number of benches and amount of equipment used; one platen press could be used for disassembly and assembly. *Timken Roller Bearing Co., Dept. RLC, Canton 6, Ohio.*

Air Dryers

Forty sizes are now included in the Van-Air line of compressed air dryers designed to intercept acid fumes and microscopic particles during regular process of extracting water and vapors from the air system. Capacities range from 7.5 to 11,080 cfm at 100 psi. The smaller capacities are designed for brake testing, spraying units, and remote tools, as well as for diesel locomotives. *Van Products Co., Dept. RLC, Erie, Pa.*

Car Cushioning Devices

The National 3C sliding sill assembly package fits any AAR standard center sill using such standard items as operating rods, striking castings, center plates, center fillers, yokes, draft gears, yoke support plates, yoke keys, and brake pipe. The sill has 24 in. travel and uses AAR standard couplers. Impact track testing indicates a reduction of up to 82% in coupler force and 80% in lading force. The entire package is supported at



each body bolster, cross-bearer, cross-tie, and end, with the supports tying both sides of the standard sill together. The car body is connected to the sliding sill through the hydraulic unit by means of horizontal keys inserted at each end of the 8-ft hydraulic pocket. Keys extend from one side of the stationary sill through the slot of the sliding sill to the other side of the stationary sill.

The long-travel NH-24 hydraulic draft gear has been designed for application to 85-ft cars, one unit being located at each end of the car. The gear has been applied to the Bethlehem Steel new all-purpose flat car. It has 24-in. hydraulic travel, plus 2-in. rubber-cushioned travel in buff and 2-in. rubber-cushioned travel in pull at each end of the car. When tests are completed, the gear will be available as a complete package, including the striking casting. *National Castings Co., Dept. RLC, 10600 Quincy ave., Cleveland 6, Ohio.*

Piggyback Car

A multi-purpose flat car, suitable for handling triple deck auto racks, trailers, containers, or general cargo, is 87 ft long. The full 87-ft length of the loading area, which is equipped with new type tie-downs, can be used by the shipper. Cushioning is provided by the Hydra-Cushion underframe. When used as an auto-carrying car, 12 regular size cars or 15 compacts can be transported. Racks are removable, making the car adaptable for one, two, or three deck use. *Evans Products Co., Dept. RLC, Plymouth, Mich.*

Flat Car for Transporting Coiled Tin Plate

The 90-ton capacity car for transporting coiled tin plate can handle eight coils weighing up to 20,000 lb each under its weatherproof covers. The covers also fold so that either fork lifts or overhead cranes can be used for loading and unloading. No dunnage is necessary. The hand-operated covers stay on during unloading. The load restrainers in which the coils are secured are easily operated and are said to give impact protection at speeds up to 9 mph. The car is 53 ft 6 in. over end sills and 49 ft 6½ in. between bulkheads. Floor width is 10 ft.

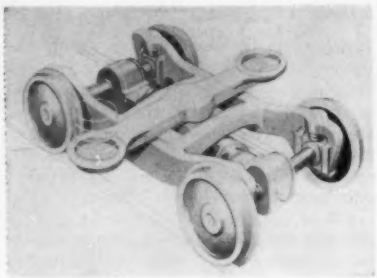
A covered hopper which can be modified to handle a variety of chemicals is also available. Its center discharge doors are said to make unloading simpler. *Thrall Car Manufacturing Co., Dept. RLC, P.O. Box 218, Chicago Heights, Ill.*

Protective Coating

An alkyd resin derivative using naphtha as a vehicle, when applied to plated or coated metal surfaces, forms a clear protective coating which is said to be extremely resistant to rust, corrosion, and oxidation. Bom-Kote may be applied by brush, spray, dip, roller, or flo-coat method, depending on size and contour of surface to be protected. When properly applied, it is said not to crack, chip, peel, or discolor with age. *Bom-Kote Corp., Dept. RLC, 919 North Michigan ave., Chicago 11.*

Passenger-Car Truck

A lightweight, high-speed, passenger-car truck, the General-70, is applicable to almost all cars—main-line, commuter, and rapid transit. The bolster springs are arranged between the car body and truck bolster, instead of between the truck bolster and frame. The one-piece bolster and frame gives maximum durability and strength as well as true alignment of wheels. The wide spacing of springs and their unusual height above the rail improves riding quality. The truck offers a high degree of roll stability, at the same time accommodating soft vertical springing. While the



General-70 trucks normally include a patented arrangement of springing, any type of springs—Pirelli, coil, air, or air-coil—can be provided. The truck design can also accommodate a wide range of motors and drivers for different applications. *General Steel Industries, Inc., Dept. RLC, Granite City, Ill.*

Journal Roller Bearing

A heavy-duty roller-bearing assembly for freight-car journals, the Bower bearing, has the same basic design as tapered roller bearings now in use. It is a rotating-end-cap model. Materials, heat treating, surface finish, and internal tolerances are chosen to give long-life service. Bearings are available for the standard journal sizes. *Bower Roller Bearing Div., Federal-Mogul-Bower Bearings, Inc., Dept. RLC, 3040 Hart ave., Detroit 14, Mich.*

Tank Car for Handling Liquid-Oxygen

Liquid oxygen is now being shipped in 65-ft, 15,000-gal "Lox" tank cars designed to move their cryogenic (super-cold) ladings at almost 300 deg F below zero. The car has a double-shell tank much like a giant thermos bottle. The vacuum space between the inner and outer shells contains perlite insulation. Shells are held together by a system of rods which suspend the inner shell within the outer one. Rod suspension absorbs train impacts and allows shell to expand toward car's center where all loading and unloading fittings are located. *Union Tank Car Co., Dept. RLC, Whiting, Ind.*

Lubricating Oil Filter System

Pleated paper filter cartridges in the Pamic lubricating oil filter system are said to keep oil in prime operating condition three to four times longer than other types made of linters, shredded waste, etc. Improved filtering, combined with an external emergency by-pass arrangement, assures maximum engine protection under a full range of severe operating conditions. The filter is designed for a maximum oil flow of 275 gal per min with a pressure drop of 1.5 psig

(Continued on page 76)

PETTIBONE MOST COMPLETE LINE OF MATERIAL HANDLING EQUIPMENT

MERCURY

GAS POWERED LIFT TRUCK

- Exclusive inching control clutch, unconditionally guaranteed for one year.
- Unitized body and frame gives extra strength, longer life.
- Tilt back hood for immediate bench high service.
- Power Steering—3 point Hydraulic Brakes.
- Cushion or Pneumatic Tires.

MODEL G-40

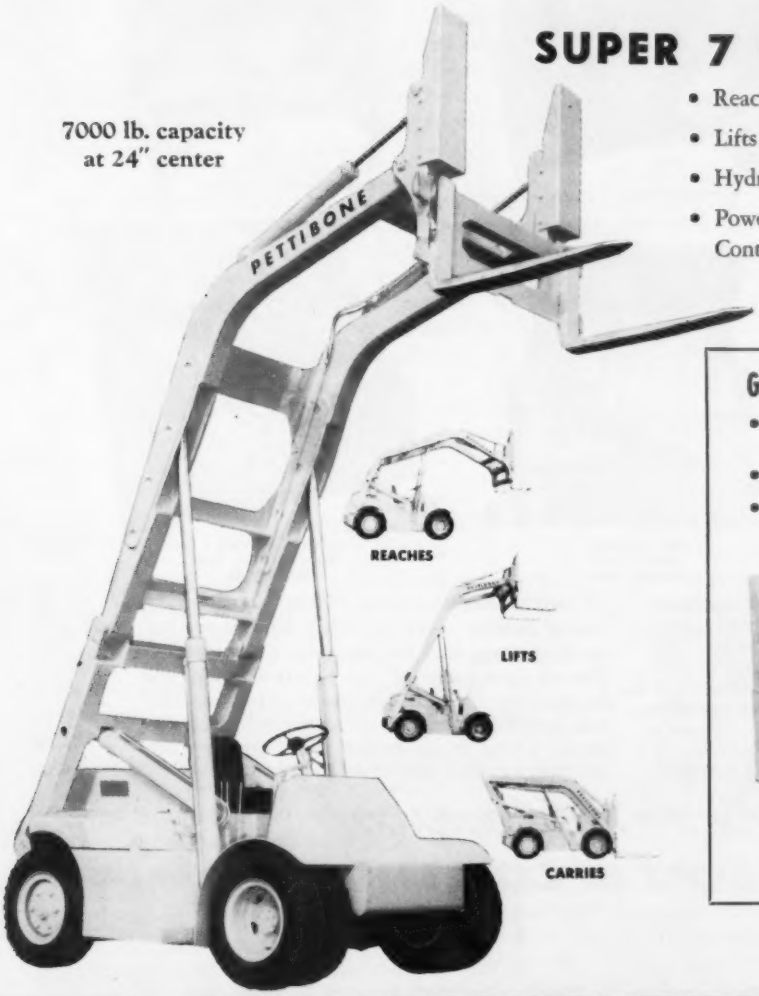
4000 lb. capacity at 24" center

Available in 1500 to 8000 lb. capacity

SUPER 7 CARY-LIFT

7000 lb. capacity at 24" center

- Reaches across rail cars and flat bed trucks.
- Lifts 13' 1" (All free lift)
- Hydraulic 4' 6" forward reach at Ground Level.
- Power Steering—Automatic Transmission—Inching Control.



GAS TRACTOR—PNEUMATIC OR CUSHION TIRES

- Small rugged 4 Wheel Gasoline Tractor
- 62" turning radius
- Double reduction drive axle with demountable wheel rim and tire assemblies
- Self-energizing Hydraulic Brakes
- Transports loads efficiently and economically

MERCURY "BANTY"

PETTIBONE MERCURY
FORK TRUCKS · TRACTORS · TRAILERS

PETTIBONE MULLIKEN CORPORATION

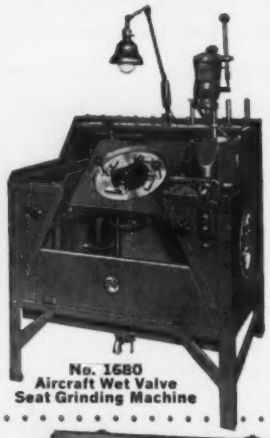
RAILROAD DIVISION
141 W. JACKSON CHICAGO 4, ILL.

80 Years of Service to the Railroad Industry

More valves are ground on SIOUX equipment than all other kinds combined

No. 645L Valve Grinding Machine

No. 687 Valve Service Combination



No. 1680 Aircraft Wet Valve Seat Grinding Machine

No. 682L Valve Face Grinding Machine

No. 1750BB Valve Seat Grinder Set

No. 1675BB Aircraft Valve Seat Grinder Set

Ever since valve grinding equipment has been made, men who lay down their hard, cold cash, have been using, comparing, testing. The result? More SIOUX valve grinding equipment is in use than all other kinds combined! It's preferred for precision, for length and breadth of line, for incomparable long life. There's SIOUX equipment for the biggest diesel. SIOUX alone makes a wet valve face grinding machine for aircraft radial engines. There's a complete line of SIOUX valve servicing equipment for small engines. And for everything in between. Twenty-four pages of the SIOUX Catalog are devoted to illustrations, descriptive matter, and specifications on valve servicing equipment. There is no better place to turn for information and help than to SIOUX.

Ask for the 1961 catalog!

ALBERTSON & CO., INC. SIOUX CITY, IOWA, U.S.A.

Factory branch—575 Connecticut Ave., South Norwalk, Conn.
Canadian Warehouse—379 Comstock Rd., Scarborough, Toronto, Ont.
Sold through Distributors in U.S., Canada, and Overseas

Consult the yellow pages under "Tools, Electric" for U. S. Distributors

▲ AIR AND ELECTRIC IMPACT WRENCHES • DRILLS • SCREWDRIVERS • NUT RUNNERS • SANDERS • GRINDERS
▲ ELECTRIC POLISHERS • FLEXIBLE SHAFTS • PORTABLE SAWS • VALVE GRINDING MACHINES ▲ ABRASIVE DISCS

EDITORIALS

'Coordinated' Values

Over the years the annual meetings of the Coordinated Associations have demonstrated their value to the railroad industry. The meetings this September 11-13 at Chicago will improve on the record for two reasons.

First, we know that many very capable railroad men have been making year-long preparations to present outstanding programs before the four associations. We know because we have been privileged to participate in some of the planning sessions. The associations' officers have been insistent that every committee report make significant contributions toward improving the railroad's position in the transportation industry. Both the officers and committee members are aware that the hard-pressed railroad industry must make every nickel count. The investment in men's time and energy for annual meetings of associations must offer a return on the investment as expected from the investment spent for new equipment. The return on investment in association participation is difficult to assess, but we are sure that no railroad will be disappointed—if every man in attendance gets out of the meetings the full value that has been and will be put into them.

Second, the Allied Railway Supply Association has scheduled very fine hotel and track exhibits during the meetings. The new products to be displayed, as reported in this issue, demonstrate the contributions made by the supply industry to improved railroad operation and service. Every man in attendance will get valuable ideas on how these developments can help his railroad.

It is up to every man to take advantage of the opportunities to benefit himself and his railroad by getting full value out of the inherent advantages of the meetings and exhibits.

'Off Again, On Again . . .'

Years ago a mythical section foreman wired his famous report: "Off again, on again, gone again—Finnigin." Early last month the Interstate Commerce Commission served a Safety Appliance order which is the latest action in a chain of events that could be paraphrased in almost the same terms that Finnigin used in Strickland Gillilan's poem.

About four years ago the Union Tank Car Company developed its "Hot Dog" tank car design in which the center sill is eliminated by utilizing the tank to transmit draft and buffing loads. A part of this design called for elimination of the side running boards, which could make possible tanks of larger diameter. Because tank car running boards are specified by the Safety Appliance Standards, Union Tank petitioned the ICC in August 1957 for a modification which would permit use of a tank car without running boards. It was pointed out that running boards are not required on many other types of cars.

The petition was denied without hearing early in 1958. Following reconsideration, an examiner again recommended denial in April 1958. UTL then redesigned its car to counter objections raised by the Railway Labor Executives Association; principal change was addition of handrails along the lower sides of the tank in the same relative location as the running boards. In April 1959 the original petition was ammended to include this feature. In July 1959 this design was accepted by Division 3 as an addition to the Safety Appliance Standards.

Following RLEA petitions for reconsideration and finally for outright suspension of this action, the ICC first denied a review hearing and then in February 1960 vacated its 1959 order which had legalized the arrangement. Division 3 entered its report in March 1961 denying the Union Tank petition. On June 27, 1961, Union Tank petitioned for reconsideration. On August 2, 1961, the ICC reaffirmed the findings of July 1959 and ordered that, effective October 1, 1961, tank cars without center sills can operate with handrails instead of running boards. The Hot Dog tank car may have passed its last legal hurdle.

What does all this mean? It only indicates that there is much more to car design than mechanics, materials, and manufacturing methods. Measures imposed by legislatures and government agencies can play major roles. While Finnigin's report resulted from his supervisor's order to be brief, neither speed nor brevity seems to characterize most government regulatory action. Certainly the uncertainties of this case have done little to inspire car builders to push ahead with the design of tank cars which might improve the competitive position of the hard-pressed roads.

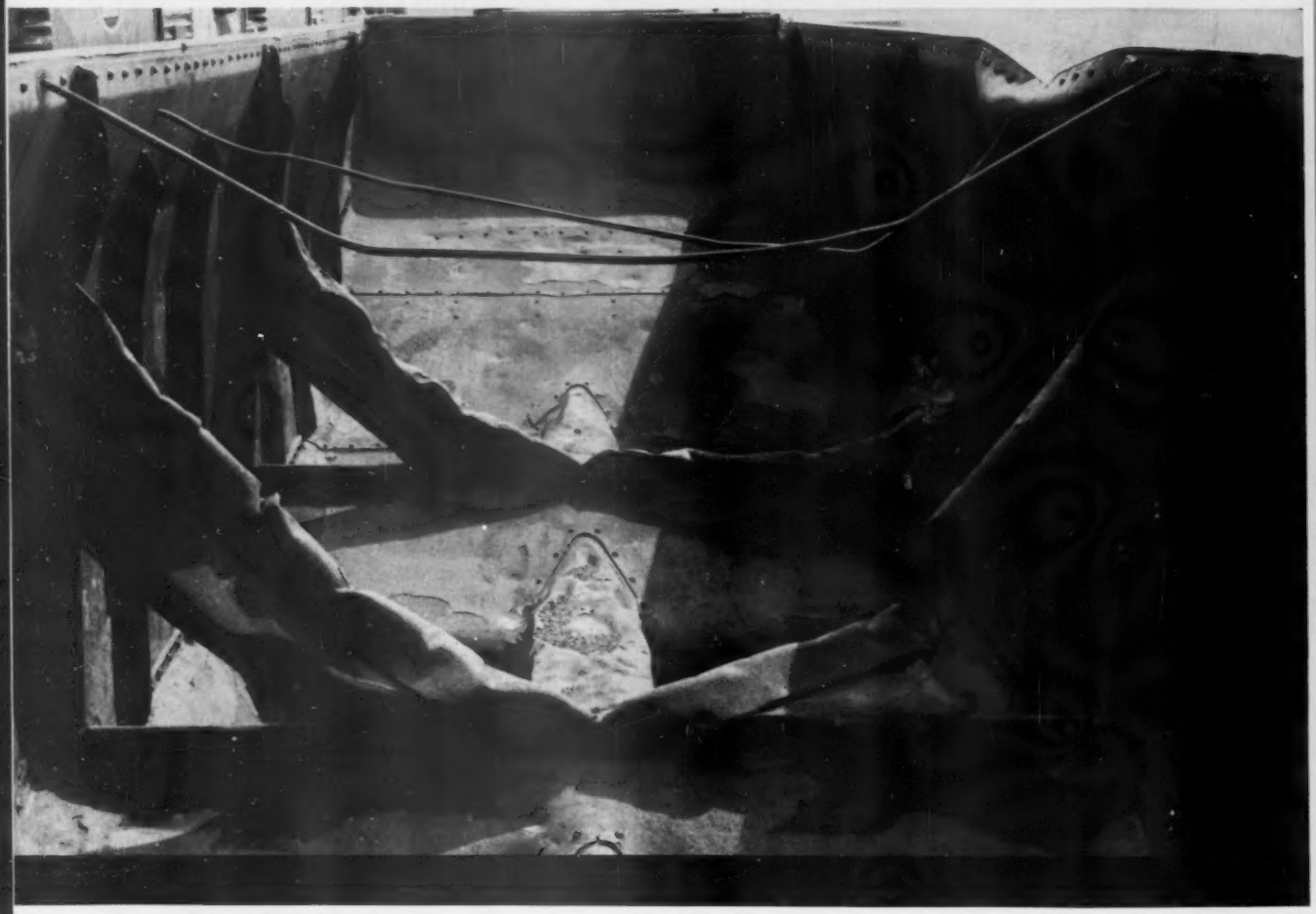
Performance Is the Criterion

Many comments have been made and much speculation has been raised about the Krauss-Maffei 4,000-hp diesel-hydraulic, described elsewhere in this issue, that will be running on American rails this fall, probably in October. Of all the questions raised about these units the one of primary importance to be answered is: Can they outperform the diesel-electric locomotives in the service for which they are designed?

We believe all questions of politics, maintenance and servicing to be of secondary importance. These questions are mostly academic unless the diesel-hydraulic demonstrates that it has inherent advantages in hauling traffic. If it can do a better job than the diesel-electric under U.S. operating conditions the other questions can be resolved. Certainly, motive power men with the resourcefulness and know-how to handle the steam-to-diesel-electric conversion will not be hard pressed in meeting maintenance and servicing requirements peculiar to the hydraulic transmission and the unusual truck design.

All are confident that these diesel-hydraulics have been engineered and built to high standards. We are sure they deserve and will get every opportunity to prove their worth under U.S. service conditions that will make it possible to reach a conclusion as to their comparative value.

P&LE 3349
BEFORE



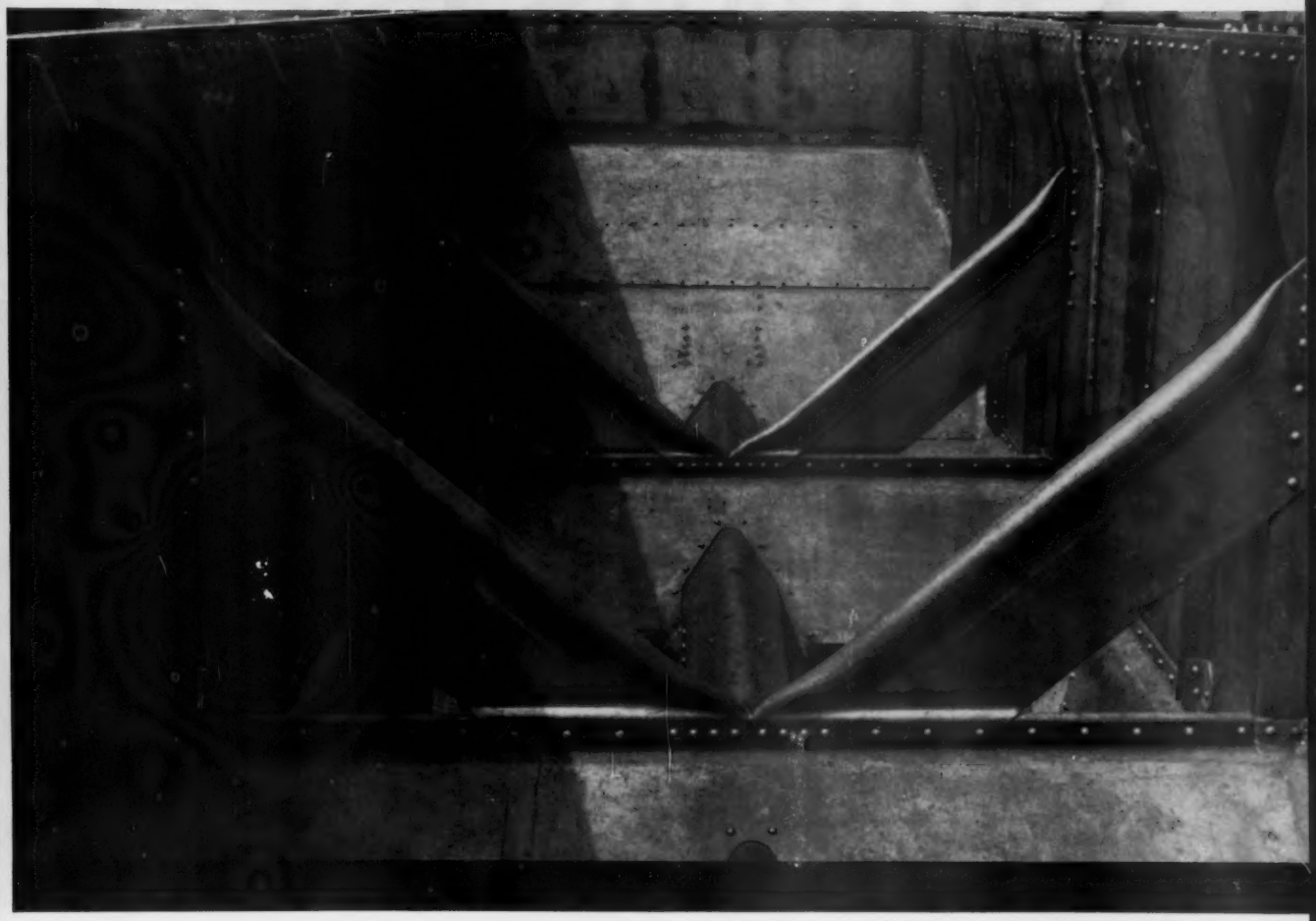
P&LE RESTORES NEW CAR QUALITY AT 1/3 NEW CAR COST

P&LE PUTS 500 VETERANS THROUGH CLASSIFIED REPAIR...EXPECTS 15 YEARS MORE SERVICE, THANKS TO P-S HOPPER CAR PARTS

See the full line of P-S Freight Car Parts and Lading Protection Devices on Tracks 1N and 2N at the Allied Railway Supply Association Track Exhibit—Chicago—September 10-13.

P&LE 3349

AFTER



■ The Pittsburgh & Lake Erie Railroad recently completed classified repair of half a thousand 13 year old AAR design open hoppers. These veteran cars had seen a lot of tough coal and ore hauling service. For the most part car structures, except trucks, wheels and parts of the underframes, were fit for scrap. No more.

A special repair line geared for smooth production flow and minimum materials handling was set up at the P&LE McKees Rocks, Pa., Steel Car Shop. An order was placed with Pullman-Standard for the delivery of hopper car parts and prefabricated components, built to P&LE specifications, as soon as stripping of the old cars was begun.

Pullman-Standard engineering and building skills assured each part would fit precisely. The P-S delivery schedule was mated to the P&LE building schedule. New car components and parts arrived in the proper order when needed and where needed in the production line.

The P&LE rolled them out as scheduled, on time and, most important, at ⅓ *new car cost.*

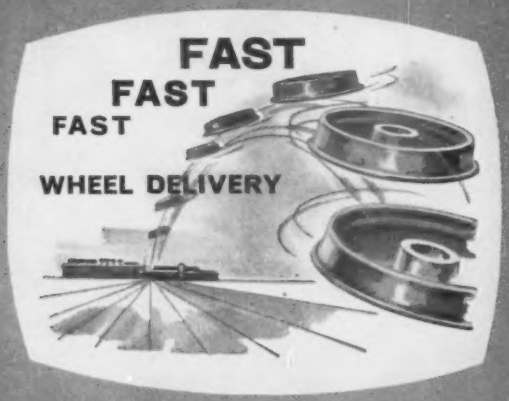
Pullman-Standard's ability, experience and capacity to program and meet production schedules like the P&LE's with quality precision-made parts of all types can be of great importance to your next rebuilding or repair program.

Contact your P-S representative for information on our full line of freight car parts, or write for the complete P-S Car Parts Catalog.

PULLMAN-STANDARD

A DIVISION OF PULLMAN INCORPORATED
200 SOUTH MICHIGAN AVENUE • CHICAGO 4, ILLINOIS
BIRMINGHAM, PITTSBURGH, NEW YORK
J. C. FENNELLY CO., SAN FRANCISCO REPRESENTATIVE

What the Griffin's Steel in Bensenville



Griffin has licked the ordinarily complex problem of logistics. When you order wheels—any quantity—you *get* them . . . *pronto!*

Because Griffin EQS Wheels are manufactured and shipped on schedule to meet your immediate needs, your inventory burdens are lessened!

OPENED IN JULY

The Bensenville plant's doors were opened in July, ready to deliver Electric Quality Steel Wheels to you at unprecedented speed.

Vital statistics? Ultra-modern pressure-pouring, production, and storage facilities. Where's Bensenville? Just outside of Chicago—transportation hub of the United States. This is the *sixth* Griffin steel wheel plant. The others: Chicago . . . Muncie, Kansas . . . Colton, California . . . St. Hyacinthe, Canada . . . Transcona, Canada.

LABORATORY SITE

The Bensenville site also houses a laboratory. Purpose of the laboratory—perhaps the finest of its kind in the country—is to ceaselessly *improve* car wheel performance and longevity, through development and testing. A technical staff of experienced engineers divides its efforts between the component sectors of the laboratory: metallurgy, ceramics, electrical, spectographic, analytical chemistry, mechanical, and research and chemistry. Their combined metallurgical know-how is pooled to serve *you*.

opening of Wheel Plant means to YOU!

Griffin plant locations? Determined by customer needs! *Wherever* you're headquartered, there's one conveniently positioned to serve you . . .

Steel wheel technology reaches its peak in this ultra-modern plant, which has but one function —to provide you with the best wheels made!

UNIQUE RELATIONSHIP

America's railroads look to Griffin, because Griffin has spent millions converting its plants from chilled iron wheel production to cast steel wheel production . . . at a time when the roads were concerned about available steel capacity. Griffin *said* it would deliver . . . and it *did*.

MORE VITAL STATISTICS

Griffin, a leader in wheel production for more than 80 years, has shipped more than 50 million wheels.

No one knows *more* about wheel technology, as it applies to America's railroads. Griffin is the *world's largest* manufacturer of railroad freight car wheels.

Visit our booth at the Allied Railway Show. Spaces 281-282-283-284.

GRIFFIN EQS®
ELECTRIC QUALITY STEEL

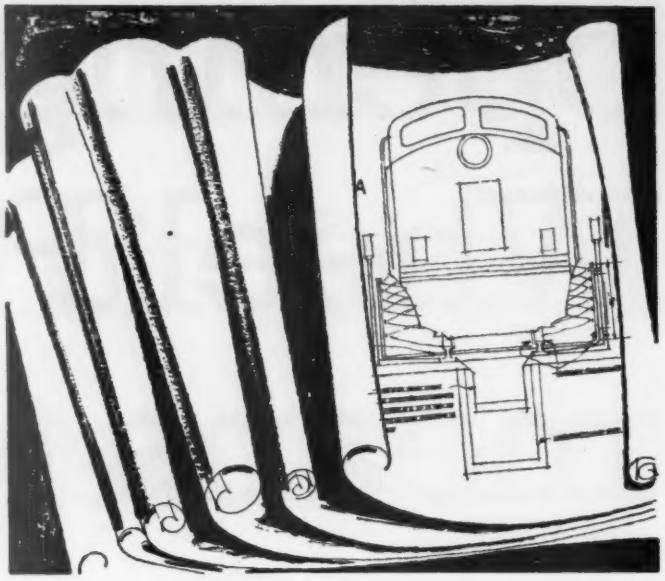
GRIFFIN WHEEL COMPANY
445 North Sacramento Boulevard, Chicago 12, Ill.

GRIFFIN STEEL FOUNDRIES Ltd.
St. Hyacinthe, Quebec; Transcona, Manitoba, Can.

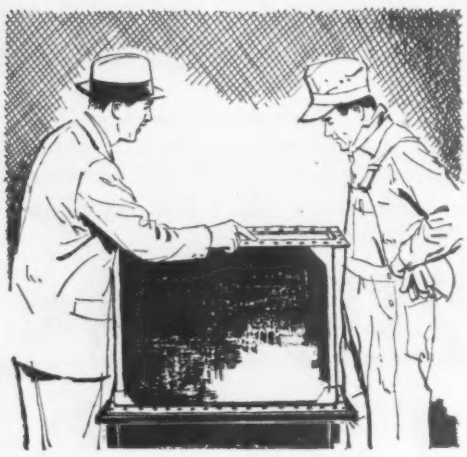
CREATIVE RESEARCH • QUALITY PRODUCTS • PROFESSIONAL SERVICE

You're on the right track with

WYANDOTTE SYSTEMWIDE SERVICE



BETTER CLEANING METHODS



SYSTEMWIDE SERVICE

HELPFUL BLUEPRINTS

WYANDOTTE SYSTEMWIDE SERVICE is available from your Wyandotte railroad cleaning specialist—the man assigned permanently to your line. Many's the time he's been able to recommend a better cleaning method at lower cost.

Your Wyandotte cleaning specialist can furnish you with blueprints detailing cleaning system installations. These show you how to set up complete cleaning systems that will be both practical and economical. All are systems that can be completely shop built, using your existing scrap materials. Many railroads have profited by using these blueprints. Yours can, too!

There's a superior Wyandotte cleaner for every cleaning job on your railroad. There are Wyandotte products for vat and steam-gun cleaning, for getting rid of dirt inside diesel or steam locomotives, and for cleaning locomotive exteriors (including wheels, trucks, and gear case covers) manually, or automatically.

Other products include cleaners for passenger car interiors and exteriors; and paint strippers. Plus: more specialized cleaners for other important railroad maintenance jobs—from descaling diesel cooling systems to deodorizing freight car interiors.

Consult your Wyandotte railroad cleaning specialist today. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California; and Atlanta, Georgia. Offices in principal cities.*

Wyandotte® Chemicals J. B. FORD DIVISION

Specialists in railroad cleaning products

Diesel-Hydraulics in Service Soon

German-built road freight locomotives are ready for shipment to D&RGW and SP after Austrian road tests

European diesel-hydraulic road-freight locomotives are expected to be running on U.S. rails soon. In a few weeks the six 4,000-hp C-C units ordered by the Denver & Rio Grande Western and the Southern Pacific are to arrive by ship in Houston, Tex., en route from the plant of the builder—Krauss-Maffei of Munich, West Germany.

For the first time in over a half century, U.S. railroads have turned to an overseas manufacturer for motive power. To compare the hydraulic transmission, already extremely popular for high-horsepower European diesel locomotives, with the electric transmission used for high-horsepower applications by U.S. diesel locomotive builders, the two U.S. roads late in 1959, each ordered three of the German-built units.

The units are not duplicates of units already operating on European railroads; they are American-size, American-style locomotives. Each has a rating 1,000 hp higher than any diesel-hydraulic unit now in European service. The locomotives are the first ever fitted with hydrodynamic brake—the diesel-hydraulic equivalent of the electrodynamic brake used on diesel-electric locomotives.

Every phase of design and construction was aimed at producing motive power which could take its place in regular main-line freight service over the rugged routes of the D&RGW and SP. With these units it should be possible to make a reliable comparison of the electric and hydraulic transmissions under U.S. operating and maintenance conditions.

Already the units have been operated experimentally on German and Austrian routes where their acceleration, braking, and tonnage-handling abilities were checked. Observers from the D&RGW and SP were on hand to see the first of the SP units, fourth of the locomotives to come off the K-M production line, go through a series of tests on the Semmering Pass line in Austria.

"During the tests, the locomotives have performed just as we expected them to; what we need now is experience." This comment by Southern Pacific Vice-President W. D. Lamprecht, essentially summed up official reaction of observers to the tests.

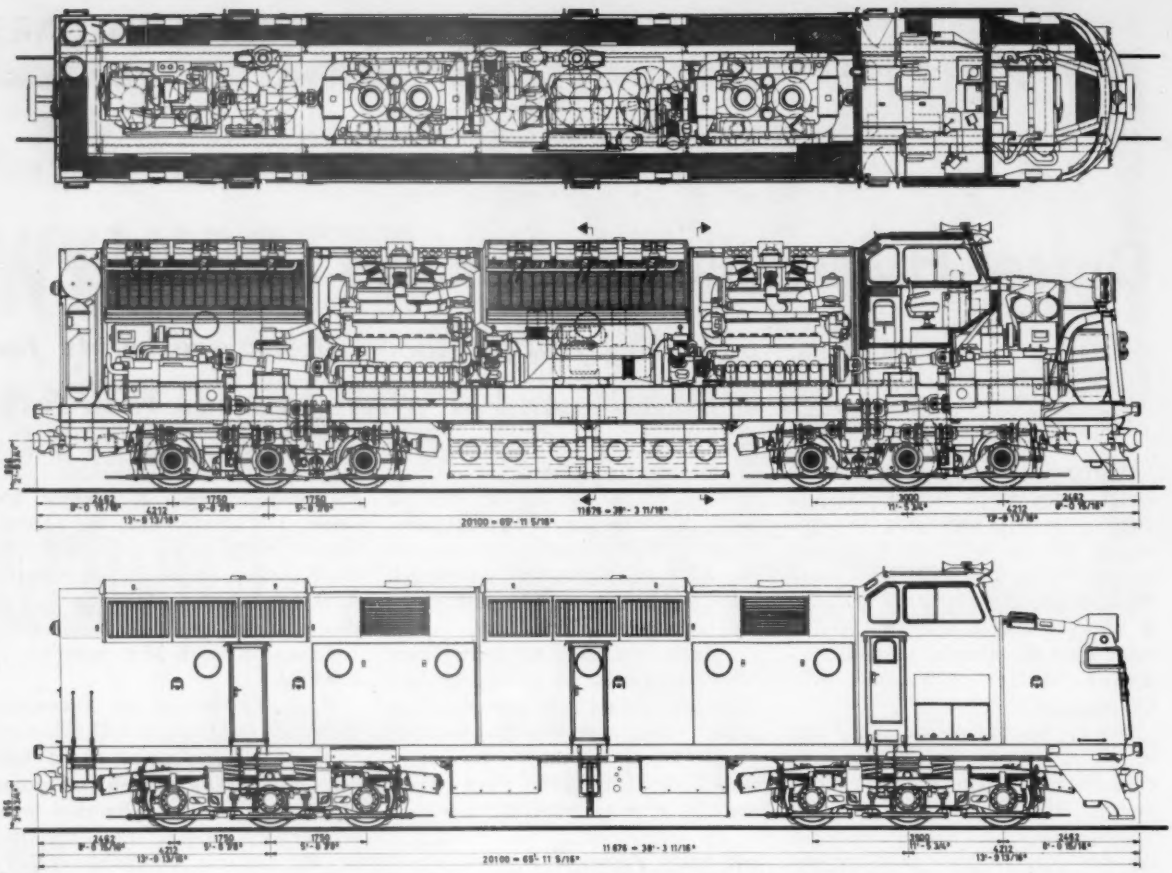
All Axles Powered

Each 4,000-hp locomotive is an A unit mounted on a pair of three-axle trucks, with each truck individually powered by a 2,000-hp diesel. Length is 65 ft $11\frac{5}{16}$ in. over coupler pulling faces, comparable to the Alco 2,400-hp road-passenger locomotive and about 5 ft shorter than the Electro-Motive 2,400-hp passenger unit. The K-M locomotive weighs 165 tons in working order, just slightly heavier than either of these U.S. locomotives. All axles on the K-M locomotive are powered.

Prime movers for the locomotive are a pair of Maybach MD 870 four-cycle, 16-cylinder engines of the "tunnel" design with disc-shaped crank webs carried in SKF cylindrical roller bearings having outer races mounted on the annular crankcase walls (RL&C, June 1960, p 35).

Each V-16 engine is supercharged and equipped with aftercoolers. The engine has a continuous rating of 2,000 hp at 1,585 rpm under standard International Railway Union (UIC)

Units are equipped for multiple-unit operation. During European tests they were fitted with buffers and continental couplers which are visible on unit shown on the front cover.



Carbody style unit for U.S. service represents departure from road switcher design which has been almost universally used in recent years. Dimensions are indicated in centimeters as well as feet and inches. Overall height of the locomotive is 15 ft 6 3/16 in.

conditions. It weighs 14,200 lb and has the same 7.3-in. bore and 7.9-in. stroke as other Maybach MD engines. Pistons are of the divided type, pressure-oil-cooled through telescoping piping within the engine. A special heat exchanger is provided for piston-cooling oil.

Each engine is started electrically by a starter generator which drives through an elastic coupling and gear step to the input shaft of the Voith transmission and thence to the engine. Two 64-volt lead-acid batteries, each with a 385-amp rating, are charged by the starter generators. This system supplies current not only for starting, but for control circuits, lighting, and auxiliaries. Each engine has an oil-fired preheater which works through the cooling-water system.

There is a V-shaped radiator bank for each engine. Air is pulled through side louvers and exhausted through the roof. The three fans for each radiator are hydrostatically driven. A multi-piston oil pump powers the oil motors which are connected to the fans by V-belts. Fan speed is controlled by pressure in the hydrostatic line which is regulated by the temperature of the cooling water. The main cooling-water circuit passes through the radiator and engine block, and then through the heat exchangers for the transmission oil, hydrodynamic brake, and engine lubricating oil. A secondary water circuit serves the supercharger after-cooler.

Each radiator is fitted with a water-spray system to improve cooling in tunnels where available air has been heated by exhaust gases. Combustion air for the engines passes over plate-type and oil-bath filters after entering the carbody through openings in the side walls.

Hydraulic Transmission

The 4,000-hp unit has fully hydrodynamic transmissions — the Voith Type L8-30rU, with three Fottinger torque converters, built-in reversing gear, and attached hydromatic brake. Each torque converter, consisting of the driving pump impeller, driven turbine runner, and a fixed stator or guide ring, has blading designed for a different speed-torque range. This differs from previous Voith turbo transmissions in which the medium- and high-speed converters were identical, the third stage driving the output shaft through step-up gearing (RL&C, Feb. 1961, p 21).

The Voith hydrodynamic braking system, which attracted much attention during the tests, is based on the principle of the Froude "water brake" in which energy is dissipated in eddy formation and heat. The brake, attached directly to the output of the Voith transmission, consists of a double-entry rotor and a fixed stator with two sets of blading to match the double-entry rotor. The eight braking steps are controlled by filling and emptying the hydraulic circuit. Oil is fed to the brake by the main transmission filling pump through a duplex check valve, the heat exchanger, and the braking valve. Once filled, the duplex valve closes and the oil circu-

lates only through the brake exchanger and brake. Heat generated is dissipated through the heat exchanger to the main engine cooling-water circuit. During braking, the engine's speed automatically steps up to 900 rpm from the normal idling speed of 600 rpm to increase cooling water circulation.

Brake filling is regulated by an eight-step valve which varies the cross-sectional areas of the brake's inlet and outlet, forming a shunt circuit. The brake-control valve is operated by the throttle handle. Because heat dissipation and torque considerations place a limit on the energy the brake can absorb, a limit valve controls brake filling. It also serves as a relief valve, allowing surplus oil to escape when oil pressure within the brake reaches a preset value.

Truck Arrangement

From each transmission, a Cardan shaft extends to an intermediate gear box on the truck frame containing a pair of spur gears and bilateral takeoff underneath. Cardan shafts then drive to Maybach Type C33vl axle drive units. Except for needle bearings in the universal-jointed Cardan shafts, all bearings in the engine and drive are SKF cylindrical roller units.

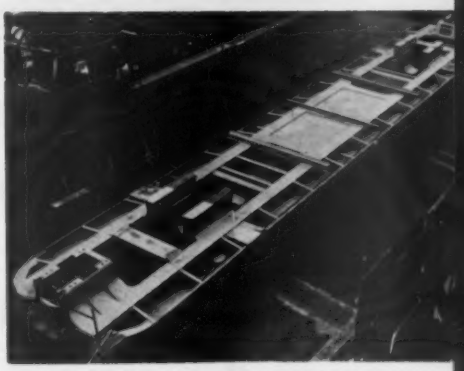
The trucks are of a special design made necessary by the Cardan-shaft drive. An all-welded, box-type construction, the truck assembly has elastic "Silentbloc" joints wherever possible to cushion shocks. A lever and rod system attached partly to the truck frame and partly to the main frame extension replaces a center pivot, guiding the truck frame around its theoretical center. Longitudinal pulling and braking forces are transmitted from the truck to the main frame through manganese steel liners which bear against the main frame extension.

Vertical loads are carried in two steps. The main frame rests, through rubber bolsters, on four cross-members which are suspended in turn from the cantilevers of the truck frames by spring tensioning screws and helical springs. The truck suspension is relatively soft, while the direct springing between the journal boxes and truck frames has a higher rigidity. The design of the springing is intended to prevent excess rolling.

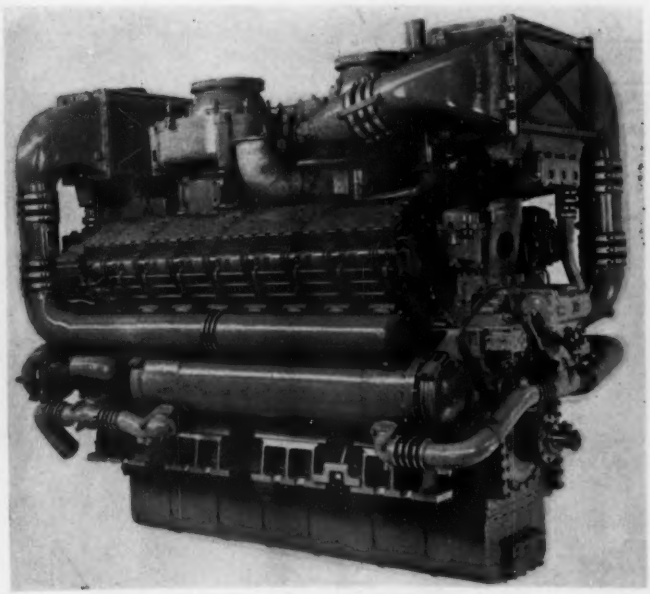
Underframe specifications for the SP and D&RGW units call for a million-pound buffing strength at the drawbars. Because of the hydraulic transmission and shafts, there are no conventional center sills. The welded underframe consists of two widely-spaced sills, continuous wide-flange I-beams, connected at the bolsters and under the engines by heavy built-up crossbearers. End members are cast-steel pieces incorporating coupler pockets.

A finished frame was subjected to the specified 500-ton compressive load. In spite of distortion of several

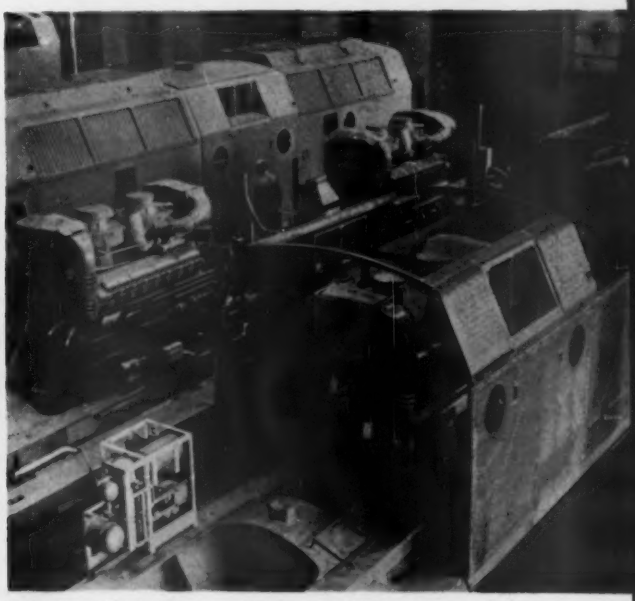
Main controller in the cab operates the diesel engines and hydrodynamic brake.



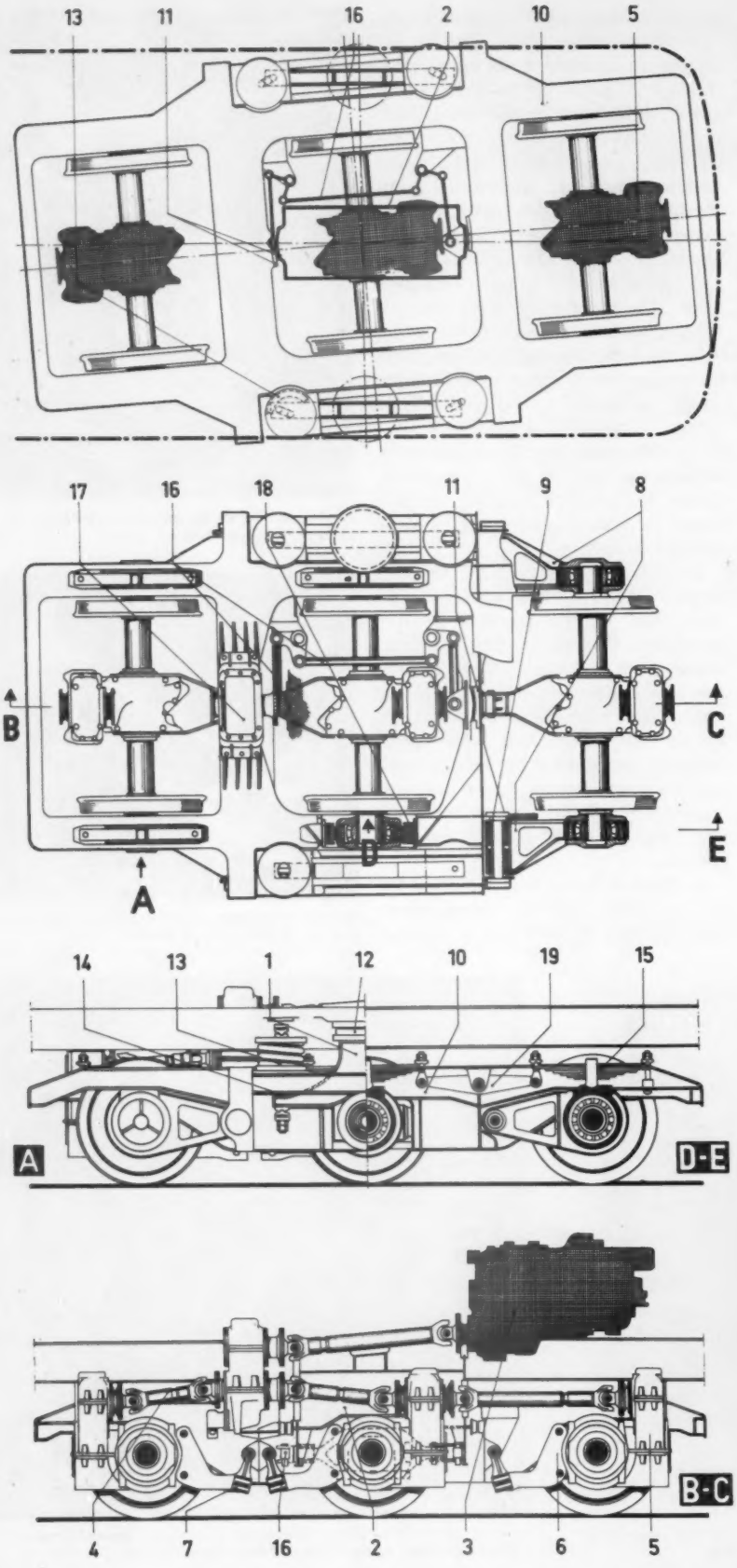
Inverted main frame shows extensions that extend down into the truck frames.



Brake mean effective pressure is 198 psi and specific fuel consumption is 0.380 lb per hr. Engine weight is 6.6 lb per bhp.



Carbody profile fits European clearances. Engines and transmissions are mounted on main frame, driving trucks through shafts.



inches at the frame center, lasting distortion was less than 1/64 in. The frames carry AAR Type E bottom-operated couplers with draft gear of the National M-380 type.

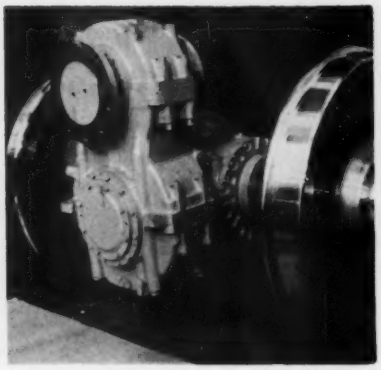
Carbody Design

Most European feature of the carbody is the pronounced inward slope of the upper portion of the cab and sides made necessary for testing under European clearance conditions. The engine-room roof is slightly lower than the cab roof, chiefly to provide extra space for exhaust stacks so that a lower temperature air can be taken in for cooling and combustion under close tunnel conditions.

The carbody consists of four separate sections: nose, cab, and two engine-room sections. Nose and engine-room sections are solidly bolted to the frame. The cab rests on rubber cones. The four sections are insulated and weatherproofed by rubber seals at the joints. All four sections consist of steel framing on which the outer walls are spot-welded. Inner sides of the engine-room walls are covered with sprayed-

Truck Components

1. Cross-member between springs
2. Main frame extension
3. Hydraulic transmission
4. Cardan shaft
5. Axle gear drive unit
6. Torque support
7. Torque support suspension element
8. Axle guide pendulum link
9. Silentbloc for axle guide pendulum link
10. Truck frame
11. Steel liner
12. Rubber bolster
13. Helical secondary spring
14. Spring tensioning screw
15. Laminated primary axle spring
16. Guide linkage
17. Distributing gear case
18. Pedestal liner
19. Equalizer



Axle drive unit is powered by Cardan shaft from distributing gear on the truck frame.

on acoustical material. The cab is double-walled, the space between outer walls and perforated metal inner sheeting being filled with stone wool. This acoustical treatment, combined with the rubber-cushioned mounting, results in a quiet cab interior.

Roof hatches are provided for removal of the engines, front starter generator, and the Cardan shaft passing under the cab floor. The two complete radiator sections in the engine-room roof are removable as units. The rear hydraulic transmission can be removed through the opening resulting from removal of the rear radiator. The nose section must be removed to remove the forward transmission. Between the trucks is a 3,280-gal fuel tank. Fuel level is indicated with Liquidometer gages.

The locomotive is equipped with a Westinghouse 26L air-brake system. The two Wabco three-cylinder 3CDCB compressors each having an output of 225 cfm at 1,000 rpm, feed the two main air reservoirs which have a total capacity of 48,820 cu in. Each engine drives one of the compressors through a V-belt drive. The air system also supplies the pneumatic control equipment and air-operated auxiliaries. All wheels are fitted with clasp brakes, with individual cylinders for each wheel. A hand brake on the rear cab wall acts on one wheel of the front truck only.

Four sandboxes, welded to the inner engine-room walls and filled through outside hatches, supply Prime sanders discharging under the leading wheels of each truck. Controls provide automatic sanding when wheels slip.

Other equipment includes a three-chime Nathan air horn; Mars light; Pyle-national dual sealed-beam headlights; markers, and illuminated train-number boards; and an air-operated Magnus bell.

Cab controls are simple and conventionally arranged. The brake stand is on the right, and the controller and reverser at the engineman's left. A panel directly ahead contains the brake and control gages, as well as warning lamps and electrical switches. To the engineman's left is a recording speed indicator. D&RGW units have Chicago Pneumatic recorders; SP units, Barco.

Master Controller

The master controller regulates both power and braking. The "drive" side of the controller has 17 steps. At Step 1 ("partial filling"), the first stages of the converters are partially filled, permitting slow and carefully controlled movements when operating light. At Step 2, the starting converters are filled to normal level ready for operation, while the engine continues to idle at 600 rpm. Steps 3 through 17 gradually increase engine output up to full power. Transition between converter stages is fully automatic, depending on controller position (engine speed) and track speed. On the opposite side of the controller from the drive steps are the eight steps of hydrodynamic brake control.

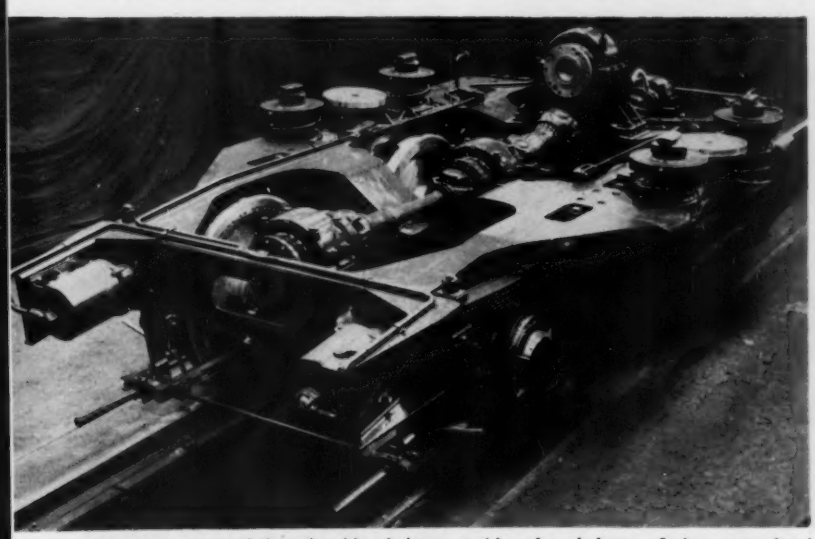
Actual control impulses for the drive, braking, and reverse gear are transmitted by a pneumatic control system. The components are on a rack within the nose section. In addition to the direct controls, pneumatic safety circuits are provided, including overload protection which interlocks the engine controls and air brakes to prevent engines being brought to full output while braking. The reverser is interlocked so that it can be operated only with the locomotive at a standstill. There are also full electro-pneumatic multiple-unit controls with Joy jumper connections.

During the Austrian tests in July, the first of the SP units made five round trips over the Semmering Pass line's 2.5% grades hauling scheduled freight trains of the Austrian Federal Railways. The Semmering route is much like the lines over which the locomotives will operate in the U.S. The uncompensated ruling grade of 2.52% on the 19-mile north slope was the main testing ground for both pulling and braking power.

Advance calculations for single-unit performance with a 965-ton train of European cars were either met or exceeded during the week-long tests. Austrian axle-loading limitations meant that the locomotive—with a design weight in working order of 165 tons—was held to 152 tons by carrying only about 660 gal. of fuel in its 3,280-gal. tank.

Trains hauled in each of the ten tests averaged about 950 tons, composed almost entirely of two-axle cars. Differences in car design—side buff-

(Continued on page 75)



Carbody is supported through rubber bolsters at sides of truck frame. Spring suspension is designed to minimize rolling of the body.

Outer axles are pivoted on truck frame; center axle is guided in pedestals.

GATC Builds Propane-Fueled Reefers

Mechanical refrigerator cars for meat service are equipped with package refrigeration units which simplify maintenance

Mechanical refrigerator cars designed specifically for hauling fresh meat and other packing-house products, are being built by General American for lease to four packing companies. Discussing the 210 reefers which his company will build, GATC President Spencer D. Moseley recently stated, "The new model offers a better unit for special use of the packer and is markedly more economical than the all-purpose car."

A propane-fueled mechanical refrigeration system maintains temperatures at any setting between 26 and 70 deg F, depending on the product to be shipped. This is the first large group of cars to be built with polystyrene foam insulation panels throughout. Foam plastic was first used by GATC in an experimental car in 1947 and was again utilized in 35 cars built in 1949. It is said to reduce heat loss to approximately half that of conventional cars, allowing use of a more economical refrigerating unit. Cooling equipment for the cars now under construction is being built by Thermo-King to General American specifications.

The unit is powered by a two-cylinder, spark-ignition, air-cooled Onan engine. Compressor, condenser and evaporator are belt-driven from the engine shaft. The engine's 8-qt crankcase usually makes it unnecessary to add oil while car is en route. Oil consumption is approximately 1 qt per 100 hr. A straight, non-detergent No. 20 oil is used year around.

In this car, the engine and condensing and evaporator units are combined into one package which can be removed by a fork lift and replaced in less than one-half hour. The power section, consisting of the engine, compressor, condenser, and controls, is outside the insulated portion of the car. The refrigeration unit includes the evaporator and fan, expansion valve, blower, heat exchanger, and controls. This section fits into a plenum through which air passes at relatively low velocity, being cooled as it returns from the top of the car and before it is delivered below the floor racks. All cooling-unit servicing can be done without entering the load compartment. In the conventional car, evaporator repairs cannot be made when a car is loaded.

The underframe is the Waugh 70,000 ft-lb, 10-in. travel type. The 40-ton Barber S-2-C trucks have $3^{11}/_{16}$-in. spring travel and are fitted with Timken roller bearings. Single wear cast-steel wheels are mounted on 5- x 9-in. axles. The Standard panel roof is assembled and fastened in place with cold rivets.

The foamed polystyrene insulation is bonded to plywood, forming rigid panels 6 in. thick. The ceiling, floor, one of the ends, and the sides from doors to ends are all one-piece panels. A 2-in. thickness of fiber glass is added between the ceiling panel and the roof. Plug door insulation is 4½ in. thick. There are no wood floor stringers, belt rails, carlines, compression points, or nailers. Huck bolts through the flanges of the exterior side posts hold the side panels in place. The coefficient of heat transfer (U factor) is approximately 88 Btu per hr per deg.

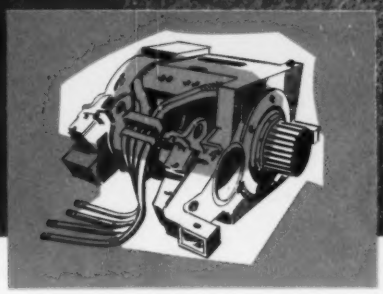
Hickory-pecan faced plywood is used for the flue liners on the sides and

(Continued on page 31)

Lift truck can handle the refrigeration package. Design makes it possible to repair the evaporator of a loaded car, an operation not previously possible.

THE SOUTHERN PACIFIC'S FAST FREIGHTS MEET EXACTING SCHEDULES WITH AN ASSIST FROM NATIONAL BRUSHES

TRADE-MARK



Because of the Southern Pacific's fast-freight service, industrial customers served by this 14,900-mile rail network are permitted to maintain smooth production schedules with a minimum of inventory.

The close scheduling involved requires rugged and reliable service from fast freight diesel locomotives.

"National" traction motor brushes—wherever used on the Southern Pacific's 2,000 diesels—offer dependable commutation and life . . . and help keep motive power in service by reducing maintenance.

To meet today's constantly changing and more difficult electrical conditions, National Carbon Company contributes to improved railroading through a positive carbon brush service program. To realize this assistance, just call your "National" Brush Man or write National Carbon Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N.Y. In Canada: Union Carbide Canada Limited, Toronto.

Contact your "National" Brush Man

UNION CARBIDE

"National" and "Union Carbide" are registered trade-marks for products of

NATIONAL CARBON COMPANY

THE ILLINOIS CENTRAL'S FAST FREIGHTS KEEP PRECISE SCHEDULES WITH AN ASSIST FROM NATIONAL BRUSHES

TRADE MARK

Modern railroads like the Illinois Central are using fast freights to bring improved service to their customers. Programs of this nature require trouble-free motive power with minimum lost-time for maintenance.

All the components in the locomotive, no matter how large or small, must offer rugged, dependable service to assure that these complex schedules will be met.

"National" generator brushes—small but vital components—offer proved commutation and life, and operate with the reliability so necessary for today's progressive railroad service.

National Carbon Company offers a positive carbon brush service program to help America's railroads provide improved freight delivery. To realize this assistance, just call your "National" Brush Man, or write National Carbon Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N.Y. In Canada: Union Carbide Canada Limited, Toronto.

Contact your "National" Brush Man

UNION CARBIDE

"National" and "Union Carbide" are registered trade-marks for products of

NATIONAL CARBON COMPANY

(Continued from page 28)

ends. Floor racks are solid and form a flue over the floor for the full length of the car. A plastic pipe floor drain with a rubber plug in each corner drains water from the car when the interior is being washed.

The 155-gal fuel tank holds 660 lb of propane. When the tank is completely filled, the unit will operate eight to twelve days, depending on the initial load temperature. Fuel consumption is a little more than 2 lb per hr under normal operating conditions. Refueling en route is not required.

The main panel includes a push-button starter switch, ignition reset switches, engine hour clock, ammeter, and manual defrost switch. All electrical controls are in a sealed box, except for the thermostat, and can be removed as a unit. The thermostat control is mounted to the right of the main control panel. After starting, the unit maintains the required car temperature through fully automatic temperature control. The engine operates at high speed until a point 2 deg F above the desired temperature is reached, at which time it is throttled back to low speed. When operating on the road, the unit will alternate between heating and cooling cycles at a constant low speed, except during defrost periods.

An automatic defrost cycle takes place at high engine speed every four hours. The cycle continues until the coil is free of ice, at which time the defrost cycle is automatically ended. A manual defrost switch will initiate a defrost cycle when depressed. During defrost, the exaporator fan clutch is disengaged, stopping air circulation across the evaporator coil. The compressor is belt-driven from the engine crankshaft. The evaporator and condenser fans are mounted on one shaft and are also belt-driven from the engine crankshaft.

Exterior side posts on new GATC car make possible a greater inside width. Lading space is insulated throughout with a layer of polystyrene foam.

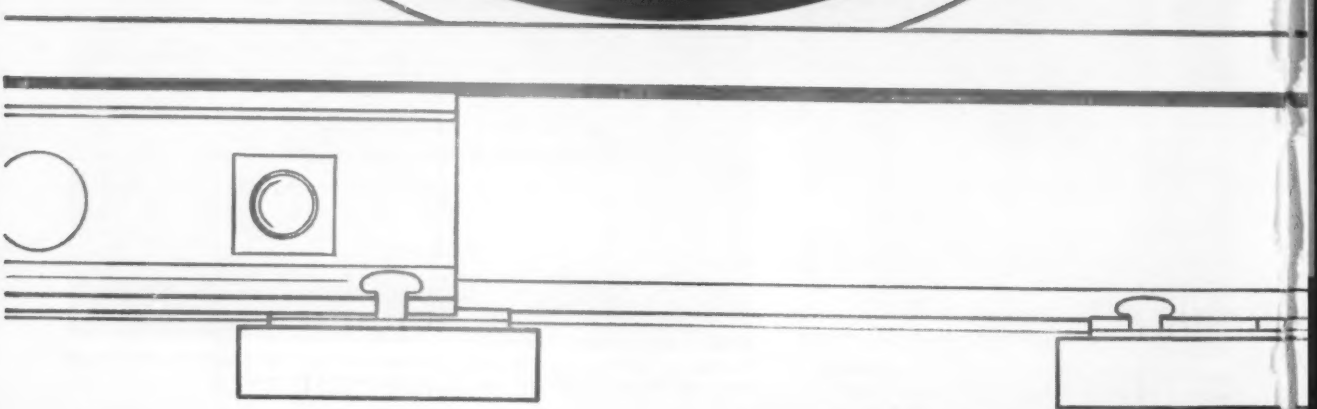
Four holding clamps swing clear of cabinet when loosened; design aims to speed removal and installation.

Evaporator fits through hole in rear of compartment. It extends into plenum through which air is circulated.

Removal or installation of refrigeration package requires 7 to 10 min. Gas line (lower left) and exhaust (upper left) are only connections to be made.

STOP HOTBOX DELAYS

that result from Incorrect Lubrication



USE SINCO® CAR OIL

Premium Grade from

SINCLAIR

Compounded from natural high quality 100 plus V.I. oils, Sinco Car Oil gives you these advantages:

- ☆ All-weather protection – will not congeal in cold weather, nor thin out in heat.
- ☆ More rapid flow through waste or pad – provides instant lubrication.
- ☆ Anti-rust and oxidation-inhibited.

For additional information, write or call Sinclair Refining Company, Railway Sales, 600 Fifth Avenue, New York 20, N.Y.
New York • Chicago • St. Louis • Houston

Sinclair
Railroad
Lubricants

Sinclair

3 SIMPLE STEPS TO REDUCE YOUR HOT BOX PROBLEMS

Any one of these steps will contribute to relief from the hot box problem . . . will help improve journal bearing performance and cut operating costs, too. Together, the indication is so promising that the feasibility of a 48-month repack period is now being tested.

Want proof? Try these quality Brake Shoe products to upgrade the bearing performance of your cars—see for yourself what they can do when the going is rough. For full details consult American Brake Shoe Company, Railroad Products Division, 530 Fifth Avenue, New York 36, New York.

A-1897

AMERICAN Brake Shoe COMPANY

Quality products cut your ton-mile costs.

1 Keep oil in box. New Absco dust guard helps keep oil in, dirt and water out. Engineered for long life. Fills the well . . . doesn't drop down onto journal when axle shifts laterally, doesn't get damaged when axle moves back. Yet it can follow under severe impact or misalignment.

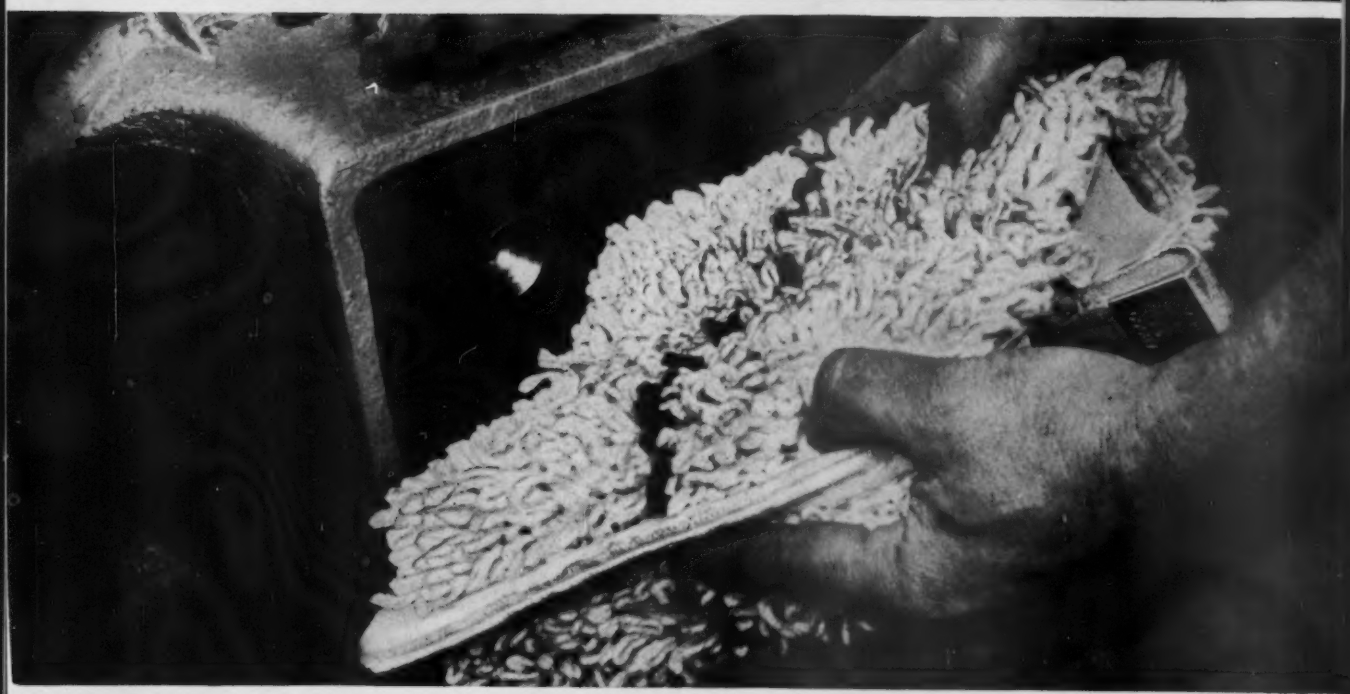
2 Feed oil to bearing. Improved Absco lubricating pad* holds and feeds ample quantities of oil under all operating conditions. Simple, economical, durable, easy to install and remove. Can be effectively renovated for long life.

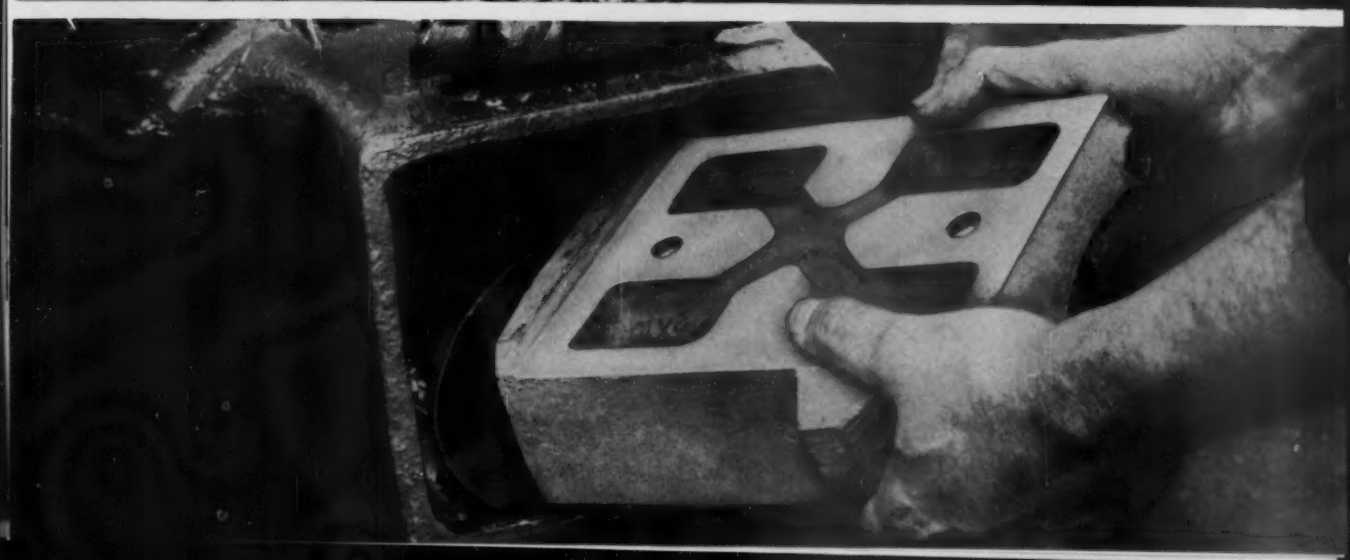
*A.A.R. conditionally approved.

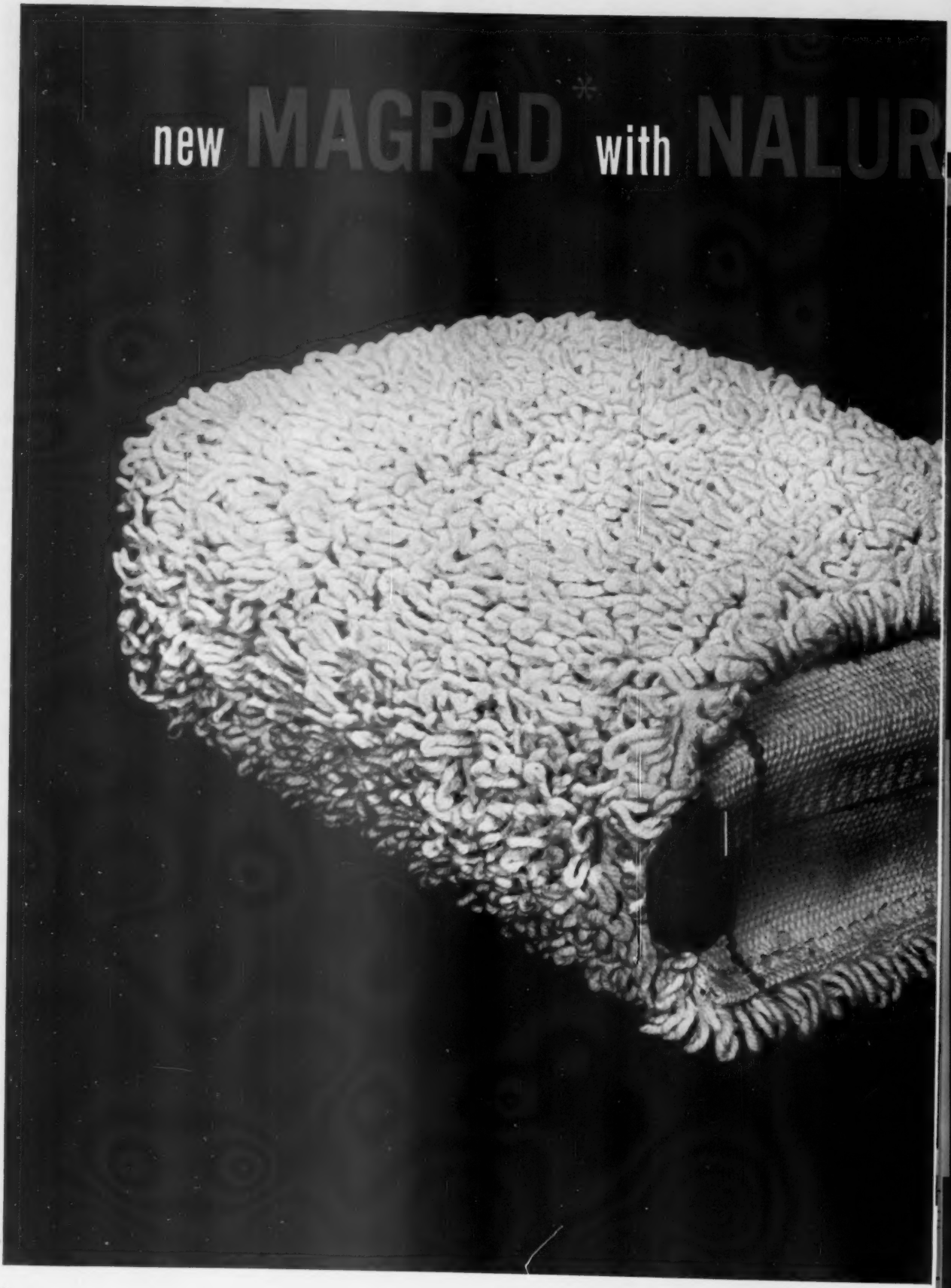
3 Stabilize journal assembly. A quick, simple method is to install the Absco positive control flat back bearing† in place of the conventional steeple back bearing. No alteration or modification to the box or axle is necessary. Proved effective in road tests extending over the past 36 months.

†A.A.R. approved for limited application for test in interchange service.

ABSCO GUARD 6 1/2 / 10






new MAGPAD* with NALUR

a low-cost lubricator that also has internal wicking and lock-stitched tufted cover

The heart of the new MAGPAD is NALUR — a specially formulated acrylonitrile foam rubber developed and produced by National Lead Company. It is highly resilient, has low oil swell characteristics and excellent resistance to compression set at high temperatures.

Outer cover is a heavy high-quality chenille, lock-stitched to withstand a 10-lb. minimum pull on tufts. End closures are tough cotton belting.

Ample internal wicking is provided by 25-ply candle-wick routed through ½" vertical orifices to provide unrestricted flow of oil.

Renovation—The MAGPAD with NALUR is sturdily made —its rugged construction permits renovation by any standard method in railroad use.

Get the full story on the new *low-cost* MAGPAD with NALUR. Ask our representative or write for details. Magnus Metal Corporation, 111 Broadway, New York 6, New York or 80 E. Jackson Blvd., Chicago 4, Illinois.

MAGNUS

METAL CORPORATION

Subsidiary of

NATIONAL LEAD COMPANY

LEADER TO PROGRESS
P
R I
MEMBER

Programs – Coordinated Mechanical Associations

Air Brake Association—*Crystal Room*

Monday, September 11

10 a.m.

President's address.

Address—E. P. Gangewere, president, Reading Co.

Air Brake Suppression of Locomotive Accelerated Slips—Ralph C. Ross, project engineer, New York Air Brake Co.

Techniques of Air Brake Maintenance—Pittsburgh Air Brake Club

2 p.m.

Train Yard Air Brake Problems and Their Remedies—St. Louis Air Brake Club

Air Compressor Lubrication—K. Reyea, research and development engineer, Texaco

Wabcopac Brake Units for Freight cars, —W. B. Kirk, chief engineer, Westinghouse Air Brake Co.

Metropolitan Commuter Train Brake Equipment—Manhattan Air Brake Club

Tuesday, September 12

8:30 a.m.

Joint meeting with Locomotive Maintenance Officers Association. Subject: Effect of New Type Brake Shoes on Locomotive Maintenance Operation

Calculated Tonnage per Operative Brake in Grade Service—Central Air Brake Club

Methods of Dynamic Interlock Application—H. N. MacPherson, supervisor air brakes, Canadian Pacific

Methods and Materials in Air Brake Pipe Joints—Dresser Manufacturing Div., Dresser Industries Inc.

Wednesday, September 13

9 a.m.

Automatic Train Operation—Montreal Air Brake Club

Oerlikon Vigilance and Safety Control—D. A. Wagner, air brake instructor, B&O

Election of officers

Question box

1 p.m.

Reports of committees

Car Department Officers—*Louis XVI Room*

Monday, September 11

10 a.m.

President's address

Report—AAR Loading Rules

Address—Spencer D. Moseley, president, General American Transportation Corp.

2 p.m.

Report—Road-Rail Transportation

Address—C. M. Roddewig, president, Association of Western Railroads

Report—Interchange and Billing for Car Repairs

Report—Design, Maintenance, and Upgrading Freight-Car Equipment

Tuesday, September 12

9 a.m.

Report—Light Repair Track and Train Yard Operation

Report—Car Lubrication. Comments—W. M. Keller, vice-president (research), AAR

Wednesday, September 13

9 a.m.

Report—Wheels, Axles, and Wheel Shop Practices. Moving picture, "It Can't Be Done," showing Southern Railway's automated shop wheel at Knoxville, Tenn. Courtesy Farrel-Birmingham Co.

Report—Passenger-Car Maintenance

Report—Maintenance and Servicing of Mechanical Refrigerator Cars and TOFC Trailers

Report—Painting

1 p.m.

Miscellaneous reports

Election of officers

Locomotive Maintenance Officers—*Grand Ballroom*

Monday, September 11

10:30 a.m.

Address—C. N. Wiggins, Jr., assistant general manager, Louisville & Nashville

Diesel Engine Maintenance. Topic: New economical methods that improve service life of diesel engines

2 p.m.

Steam Generator and Water Treatment. Topic 1: New simplified control for steam generators. Topic 2: Steam generator rifled-tube performance

Shop Equipment. Topic: Modern equipment and methods for spot maintenance and inspection of locomotives

Tuesday, September 12

8:30 a.m.

Diesel Mechanical—Other. Topic: Effect of new type brake shoes on locomotive maintenance and operation

Address—Edwin Butler, assistant director of locomotive inspection, Bureau Safety and Service, ICC

Diesel Material Reconditioning and Control. Topic: Latest practices in economical reclamation of locomotive parts

Wednesday, September 13

8:30 a.m.

Diesel Electrical Maintenance. Topic 1: New ideas in maintenance and rebuilding of traction motors and main generators. Topic 2: Upgrading control equipment

Fuel and Lube Oil. Topic 1: Lube and fuel oil filtration. Topic 2: Engine sparking

1:30 p.m.

New Developments in Motive Power Maintenance. Topic: Mechanical department production control systems, or any other recent maintenance developments

Railway Fuel and Operating Officers—*Bal Tabarin*

Monday, September 11

10 a.m.

President's address

Address—J. C. Kenefick, general manager transportation, New York Central

Panel discussion on Loss and Damage Prevention

Address—V. C. White, director of supervisory training, Frisco

2 p.m.

Safety—E. H. Hallmann, director of personnel, Illinois Central

Panel discussion on Train Handling

Panel discussion on Instructions on Handling of Trains with 24RL and 26L

Tuesday, September 12

9 a.m.

Discussion on Duties and Responsibilities of Road Foreman

Panel discussion on Economy in Use of Fuel oil

Economical Utilization of Power—C. M. Machin, Jr., manager motive power operation, Baltimore & Ohio

Panel discussion on Terminal Delays and Yard Operation

New Electric Motive Power E-44—J. S. Lotz, assistant road foreman, Pennsylvania

Wednesday, September 13

9 a.m.

EMD Advance Horsepower— V. E. Rennix, general sales manager, EMD

Panel discussion on Diesel Failures, Causes and Remedies

2 p.m.

Official business

Open discussion

MAKE A NOTE
OF THIS
important
name
change—

Texaco Car Oil 1960 HD
is now
TEXACO
JOURNALTEX HD

Only the name has changed, to make it more descriptive. For specific examples of how Texaco Journaltex HD can help you reduce hotbox setoffs,

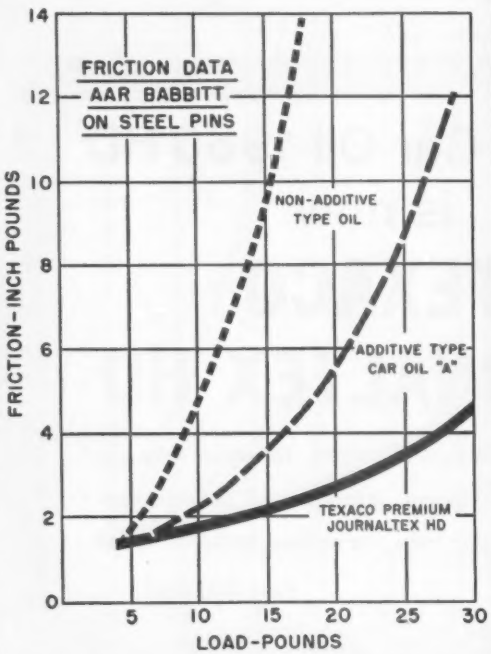
turn the page . . .

PREMIUM OR NON-ADDITIVE TYPE OIL? **Premium Texaco**

Three reasons why new can help reduce hot

60% less friction

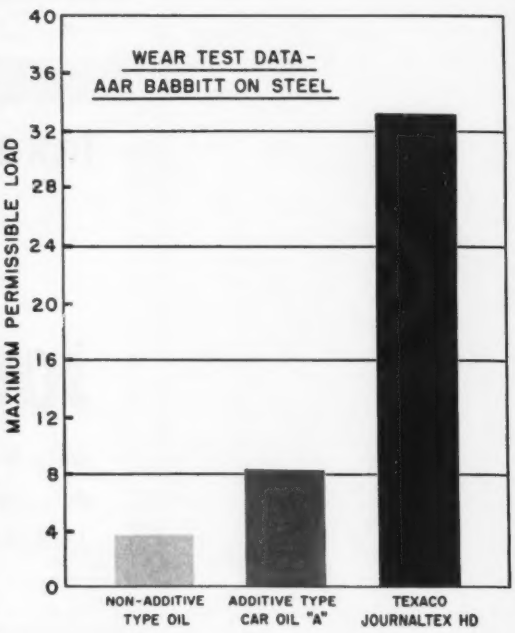
Less friction means lower operating temperatures . . . an important reason why Texaco Journaltex HD can help cut hot boxes as much as 40%. A special additive gives Journaltex HD a 60% lower friction coefficient under heavy load than most non-additive type oils.



Lower friction coefficient of Texaco Journaltex HD graphically illustrated. Journaltex HD's ability to resist friction becomes even more pronounced as load-pounds are increased. The uniform quality of Texaco Journaltex HD assures consistently reliable performance.

8 times greater load-carrying capacity

Metal-to-metal contact between journal and bearing, the result of localized high bearing pressure, is a common beginning of hot boxes. Actual tests at Texaco's Research Center prove that Journaltex HD retains its protective oil film at a pressure *8 times greater* than the failure point of a non-additive type oil.



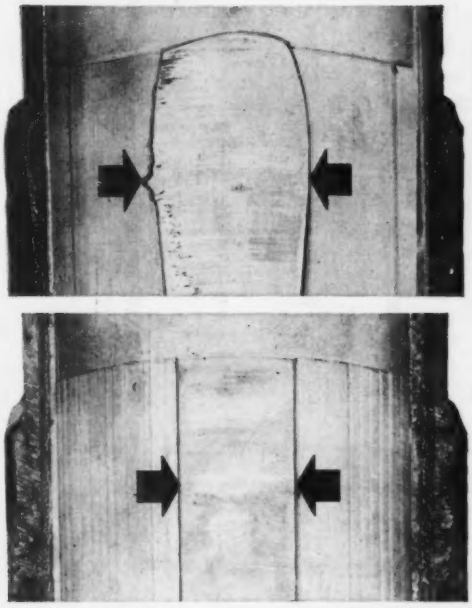
Greater load-carrying capacity of Texaco Journaltex HD graphically illustrated. Journaltex HD retains its protective oil film at a laboratory pressure much greater than would be encountered under average operating conditions.

Journaltex HD can actually prove more economical

Texaco Journaltex HD boxes as much as 40%

Minimum bearing metal displacement

Scored, worn, and misaligned bearings are also a common cause of hot boxes. Texaco Journaltex HD has a built-in characteristic that hinders gross bearing metal removal. Instead, Journaltex HD redistributes minute amounts of babbit... *actually assists in reseating the bearing.*



Smoother bearings with Texaco Journaltex HD. Contact areas of above journal bearings were reduced to 9 sq. inches and subjected to identical tests. Serrated edges (arrows) on top bearing, run on non-additive type oil, indicate considerable metal displacement. Straight edges (arrows) on lower bearing, run on Texaco Journaltex HD, indicate almost no metal displacement.

Savings can reduce car oil costs by 22c a gallon

Five major roads reported up to 40% decreases in hot boxes after switching to Texaco Journaltex HD. Savings because of reduced hot boxes can more than offset the slight additional cost of premium Texaco Journaltex HD.

For example: Suppose a road using 200,000 gallons of car oil yearly reduces hot boxes from 1,100 to 660 by switching to Journaltex HD in all journal boxes—using both summer and winter grades. A minimum saving of $100 on each eliminated hot box would net this road $44,000. This sum, if applied to the purchase price of the car oil, would reduce its cost by 22¢ a gallon. Therefore, in real terms, the per-gallon-price of Texaco Journaltex HD is actually about 16¢ less than the price previously paid for the non-additive type oil.

For full details on how Texaco Journaltex HD and unmatched service can mean fewer hot boxes for your road, call the nearest Texaco Railway Sales Office in New York, Chicago, San Francisco, St. Paul, St. Louis or Atlanta. Or write:

Texaco Inc., *Railway Sales Division,* 135 East 42nd Street, New York 17, N. Y.

Tune In: Huntley-Brinkley Report, Monday Through Friday—NBC-TV

TEXACO

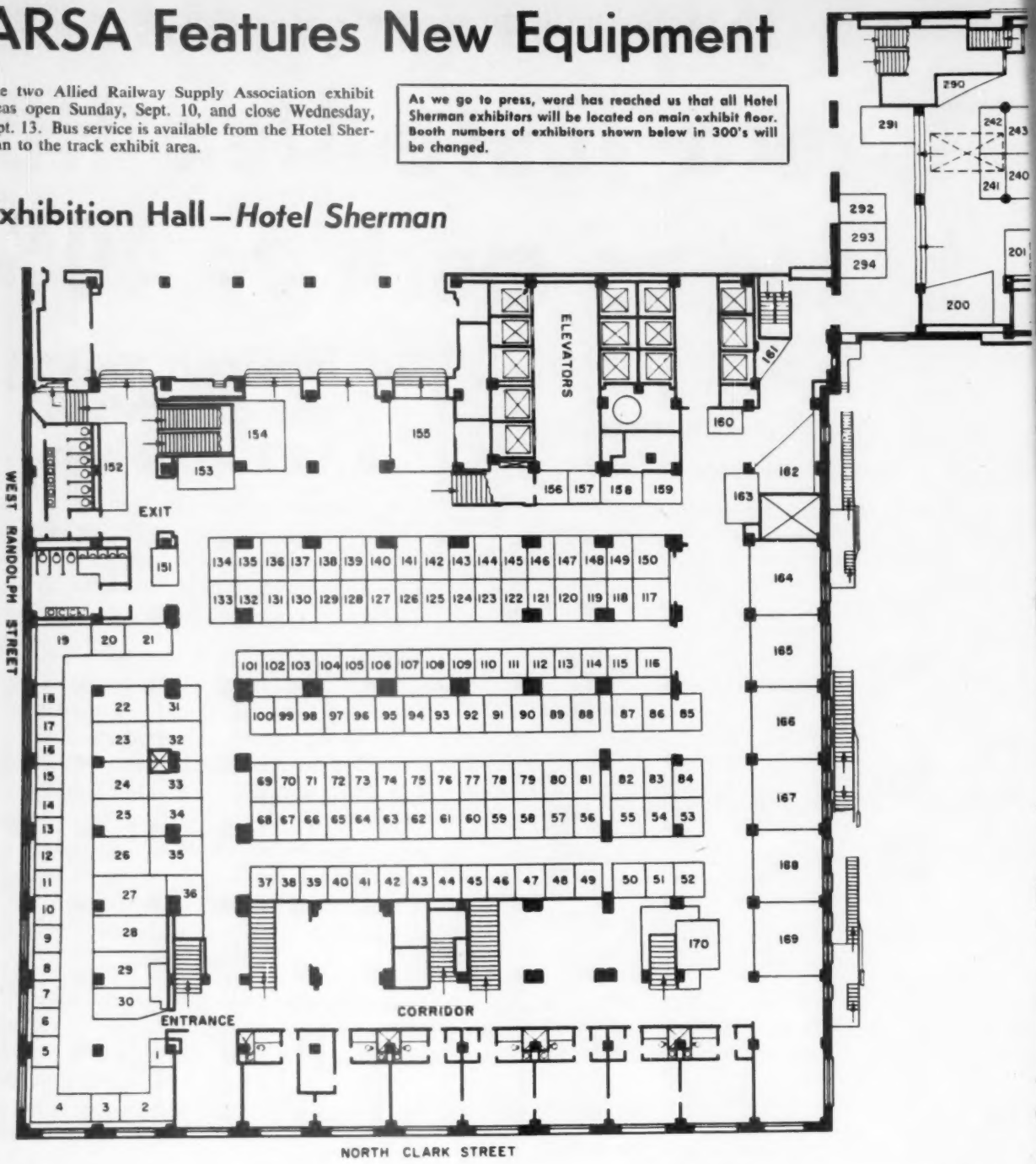
Throughout the United States
Canada • Latin America • West Africa

ARSA Features New Equipment

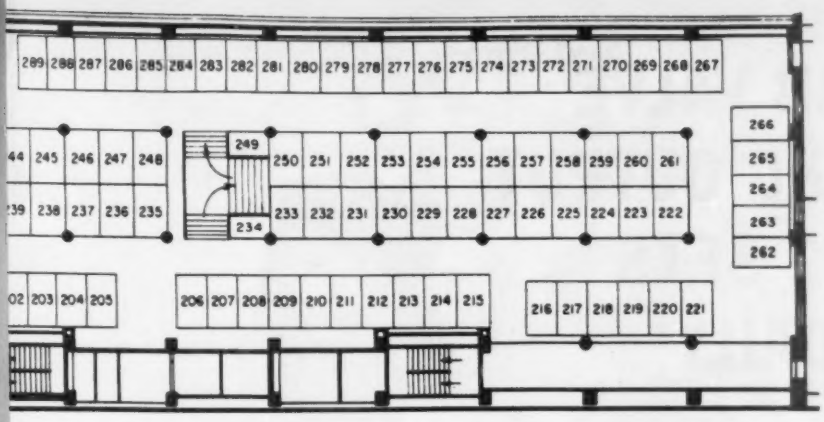
The two Allied Railway Supply Association exhibit areas open Sunday, Sept. 10, and close Wednesday, Sept. 13. Bus service is available from the Hotel Sherman to the track exhibit area.

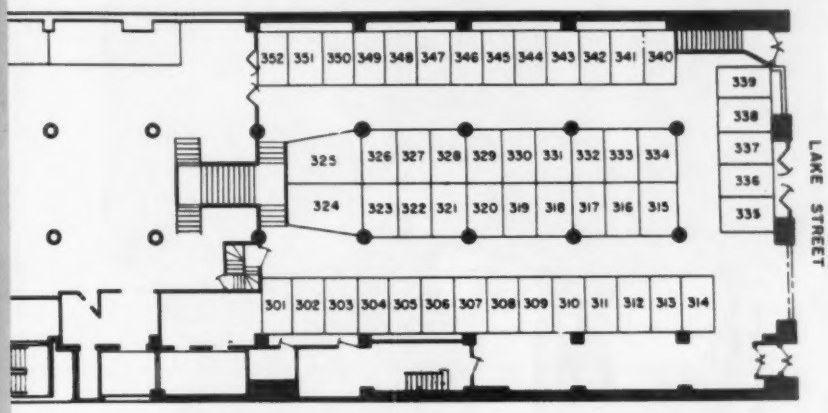
As we go to press, word has reached us that all Hotel Sherman exhibitors will be located on main exhibit floor. Booth numbers of exhibitors shown below in 300's will be changed.

Exhibition Hall—*Hotel Sherman*



Exhibitors	Booth No.
Adams & Westlake Co.	30
Aeroquip Corp.	78 to 81
Ajax-Consolidated Co.	206 to 209
Alert Mfg. & Supply Co.	143 to 145
American Air Filter Co.	26
American Brake Shoe Co.	37 to 41
American SAB Co.	166
American Steel Foundries	230 to 234 and 249 to 253
Arcair Co.	200
Barco Manufacturing Co.	260-261
Bendix Corp.	216
Bem-Kote Corp.	239
Bower Roller Bearing Div., Federal-Mogul-Bower Bearings, Inc.	210 to 212
Buck Equipment Corp.	335-336
Buckeye Iron & Brass Works	88 to 90
Buckeye Steel Castings Co.	226-227 and 256-257
Buffalo Brake Beam Co.	240 to 243
Burrell Flange Lubricator Co.	307
Callaway Products, Inc.	22
Cardwell Westinghouse Co.	165
Chicago Malleable Castings Co.	16
Chicago Pneumatic Tool Co.	228-229 and 254-255
Chicago Railway Equipment Co.	101-102
Chrome Crankshaft Co. of Illinois	325
Chromium Corp. of America	156-157
Clayton Manufacturing Co.	82 to 84
Cleveland Graphite Bronze, Div. of Clevite Corp.	6-7
Cleveland Hone & Mfg. Co.	68
Clinton Co.	110
Component Engine Parts, Inc.	58
Dayton Industrial Products Co.	35
DO Co.	31
Double Seal Ring Co.	258-259
Dover Corp., OPW Div.	305
Dowelac Div., D. B. Frampton & Co.	23
Duff Norton Co.	288-289
Edgewater Steel Co.	106-107
Elastic Stop Nut Corp. of America	48-49
Electric Storage Battery Co.	213 to 215
Electro-Motive Div., General Motors Corp.	262 to 266
Elicon-National, Inc.	42 to 45
Enterprise Railway Equipment Co.	278
Farr Co.	270-271
FreightMaster, a Division of Halliburton Co.	324
Frost Paint & Oil Corp.	15
Frost Railway Supply Co.	108
General Electric Co.	117 to 126
General Radiator, Inc.	222-223
General Steel Industries	158-159
Gould-National Batteries, Inc.	114 to 116
Gray Co.	74 to 77
Griffin Wheel Co.	281 to 284
Gustin-Bacon Mfg. Co.	272 to 274





LOWER EXHIBIT HALL

Hall-Toledo, Inc. 61-62
Helwig Carbon Products, Inc. 304
Hennessy Lubricator Co. 111
Holland Co. ..... 132 to 135
Hyatt Bearings Div., General Motors Corp. ..... 285 to 287

Illinois Auto Electric Co. ..... 53 to 55

International Railroads Weighing Equipment Corp. 170

Johns-Manville Corp. ..... 71 to 73
Journal Box Servicing Corp. 155

K W Battery Co. 149-150
Kelly Radiator Co. 224-225
Keystone Railway Equipment Co. ..... 12 to 14

LFM Manufacturing Co. ..... 8 to 11
Linde Co., Oxweld Railroad Dept. ..... 91 to 93

M & J Diesel Locomotive Filter Corp. 97
MacLean-Fogg Lock Nut Co. 141-142
Magnus Metal Corp. 98-100
Miller Lubricator Co. 153
Miner, W. H., Inc. ..... 19 to 21
Modern Railroads 152
Mosebach Manufacturing Co. 2
Motor Coils Manufacturing Co. 1

National Carbon Co., Div. of Union Carbide Corp. ..... 275 to 277
National Castings Co. 162-163
Nickel Cadmium Battery Div., Nife Incorporated 66-67

Oakite Products, Inc. 17-18
Owatonna Tool Co. 56-57

Paragon Bridge & Steel Co. 306
Peerless Equipment Division of Poor & Co. ..... 146 to 148
Pocket List of Railroad Officials 160
Precision Engineering Co. 33-34
Prime Manufacturing Co. 112-113
Punch-Lok Co. 59-60
Pyle-National Co. ..... 267 to 269

Railroad Materials Corp. 161
Railway Locomotives & Cars 151
Railway Service & Supply Corp. 104-105
Republic Steel Corp., Berger Div. ..... 63 to 65
Russell, Burdsall & Ward Bolt & Nut Co. 109
Rust-Oleum Corp. 291

SKF Industries, Inc. ..... 292 to 294
Simmons-Boardman Publishing Corp. 151
Sloan Valve Co. 154
Southland Mfg. Co. 69-70
Spring Packing Corp. 27-28
Stainless Steel Products, Inc. 352
Standard Car Truck Co. ..... 3 to 5
Stran-Steel Corp., Div. of National Steel Corp. 94-95
Stucki, A., Co. 32
Superior Car Door Co. 103
Superior Diesel Filter Co. ..... 85 to 87

T-Z Railway Equipment Co. 24-25
Thompson Products Ramco Div., Thompson Ramo Wooldridge Inc. 168
Timken Roller Bearing Co. ..... 127 to 131; 136 to 140
Transicold Corp. 36

Uni-Pak Corp. ..... 85 to 87
Unit Truck Corp. 290
Unity Railway Supply Co. 96
Universal Railway Devices Co. 164

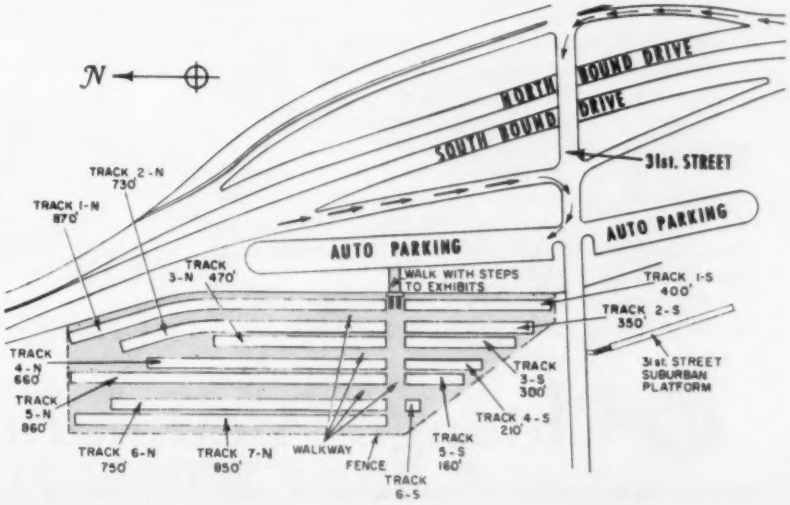
Van Products Co. 279-280
Vapor Heating Corp. ..... 201 to 205
Vascoloy-Ramet Corp. 46-47

Waugh Equipment Co. 167
Westinghouse Air Brake Co. ..... 217 to 221
Wine Railway Appliance Co. ..... 235 to 238; 245 to 248
Wyandotte Chemicals Corp. ..... 50 to 52

Youngstown Steel Car Corp. 169
Youngstown Steel Door Co. 244

Track Exhibit—*Illinois Central 31st Street Yard*

Track Exhibitors	Track
Aluminium Limited Sales	1-S
American Car & Foundry, Div. of ACF Industries, Inc.	2-S
Bethlehem Steel Co.	5-N
Brandon Equipment Co.	3-S
Buck Equipment Corp.	1-N
Buffalo Brake Beam Co.	4-N
Clark Equipment Co.	4-N
Dana Corp.	6-N
Dowelac Div., B. F. Frampton & Co.	6-N
Enterprise Railway Equipment Co.	5-N
Evans Products Co.	4-N
General American Transportation Corp	5-N
Greenville Steel Car Co.	1-S
Hydra-Cushion	5-S
International Car Div., Morrison International Co.	4-N
Koppers Co.	6-N
Landreth Industries	6-N
MacLean-Fogg Lock Nut Co.	4-S
Minnesota Mining & Mfg. Co.	6-S
Martell, J. W., Co.	3-N
National Castings Co.	5-N
North American Car Corp.	1-S
Pacific Car & Foundry Co.	1-N
Paragon Bridge & Steel Co.	1-N
Peerless Equipment Division of Poor & Co.	1-S
Pettibone-Mulliken Corp., Mercury Div.	1-S
Pullman-Standard	1-N and 2-N
Reynolds Metals Co.	4-N
Ross & White Co.	1-S
Schield Bantam Co.	2-N
Sparton Railway Equipment Div., Sparton Corp.	2-N
Standard Car Truck Co.	1-S
Stran-Steel Corp., Division of National Steel Corp.	6-N
Superior Car Door Co.	4-N
Thrall Car Mfg. Co.	1-N and 2-N
Transportation Specialties Co.	3-N
Union Asbestos & Rubber Co.	3-N
Union Tank Car Co.	4-N
United States Steel Corp.	2-N
Westinghouse Air Brake Co.	3-N
Whitehead & Kales Co.	3-N
Youngstown Steel Door Co.	4-S



INCREASE AB VALVE SERVICING OUTPUT FROM 4 to 7 SETS PER MAN DAILY

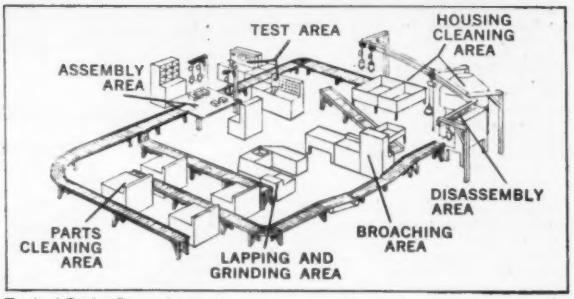
See CP Multi-runners and a typical Brake Room Layout in BOOTH 255

ALLIED RAILWAY SUPPLY ASSOCIATION CONVENTION
Sept. 10-13
HOTEL SHERMAN
Chicago

By using CP Multi-runners and mechanized overhaul methods, you can realize big savings on the per set cost of your AB Valve work,

Working closely with maintenance departments, CP engineers have developed Air Brake Room layouts that will reduce costs on your C.O.T. & S. Program. We supply Multi-runners for every disassembly and assembly operation . . . develop time-saving conveyor and bench arrangements . . . recommend suitable cleaning, lapping, boring and test equipment.

Let us help you plan the most efficient layout for your service needs . . . you'll profit by our experience.



Typical Brake Room Layout

Chicago Pneumatic
8 East 44th Street, New York 17, N. Y.

GEARED TO PROGRESS
P R I MEMBER

PNEUMATIC AND ELECTRIC TOOLS • SPEED RECORDERS AND INDICATORS • PORTABLE AND STATIONARY AIR COMPRESSORS • HYDRAULIC RIVETERS

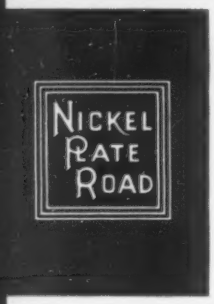
OVER ~~5000~~ 6500 NOW IN SERVICE ON 36 RAILROADS

CLASS I RAILROADS USE IT
EVERY RAILROAD NEEDS IT
YOUR RAILROAD SHOULD HAVE IT ON EVERY CAR
DOUBLE ACTING AUTOMATIC BRAKE REGULATOR
Maintains piston travel at all times. ● Shoe wear or replacement is instantly compensated. ● Shoes can be replaced without touching regulator. ● All steel construction. ● Tested to operate at 100 p.s.i. on 12" cylinder. ● Keeps men out from under cars. ● Saves labor. ● Does not cycle. ● Will not slip under impact. ●
AAR APPROVED CERTIFICATE No. 6
H&L PEACOCK
BRAKE REGULATOR
MODEL 1340
ELLCON-NATIONAL INC.
30 CHURCH ST., NEW YORK 7, N.Y.

See Booths 42-45 at the Allied Show

ELLCON-NATIONAL INC.

30 CHURCH ST., NEW YORK 7, N.Y.

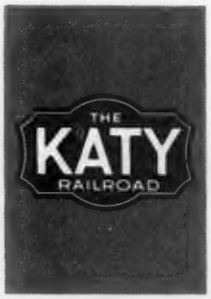


67 Railroads declare cold war on the hot box

67 railroads are spearheading the switch that's routing the hot box problem. They're going "Roller Freight"—solving the problem by eliminating the cause. The 67 railroads and 38 other freight car owners now have over 77,000 cars on Timken® tapered roller bearings in service or on order. Two out of three new cars ordered in 1960 were on roller bearings. And leading the way are Timken tapered roller bearings, the railroad bearing of proved performance.

With cars on Timken tapered roller bearings, freight trains can roll at high speeds, stick to schedules, give shippers better service than ever. Cars on Timken bearings are averaging more than a hundred million miles between car setouts caused by overheated bearings. That's because Timken bearings roll the load instead of sliding it.

Now's the time to make the switch. When all freight is "Roller Freight" the railroads will save an estimated $288,000,000 annually in operating and maintenance costs—about $144 per car—based on the Timken Company study, "The Use of Roller Bearings on Freight Cars—An Economic Study". And they'll be in a position to win more business with the best service ever. Write for information. The Timken Roller Bearing Company, Canton 6, Ohio.



See us at the Allied Railway Supply Association Exhibition, Hotel Sherman, Chicago, September 10-13, Booths 127-131, 136-140.

Reading Lines
C AND O FOR PROGRESS
NORFOLK SOUTHERN NS RAILWAY COMPANY
SAFETY DULUTH MISSABE AND IRON RANGE FIRST
THE MILWAUKEE ROAD
ERIE - LACKAWANNA
NEW YORK CENTRAL SYSTEM
PITTSBURGH & WEST VIRGINIA P&W RAILWAY
CENTRAL OF GEORGIA
PRR
Burlington Route
LINKING 13 GREAT STATES WITH THE NATION B&O
ONS&L
GM&O
ATLANTA & SAINT ANDREWS BAY The BAY Line RAILWAY CO.
GREEN BAY ROUTE
ILLINOIS CENTRAL
ALASKA RAILROAD
$OO LINE
Chicago GREAT WESTERN Railway
SEABOARD AIR LINE RAILROAD
heavy duty
TIMKEN®
tapered roller bearings
C&EI
L&N
Rock Island
CHICAGO NORTH WESTERN RAILWAY
BESSEMER
AKRON CANTON YOUNGSTOWN OHIO'S ROAD OF SERVICE
AN
PACIFIC GREAT EASTERN RLY.

There are many good

NATIONAL

In this case it's

Now National offers a complete family of freight car trucks. From the familiar 5 x 9 . . . through the widely-used 5½ x 10 and 6 x 11 . . . to the new and stronger 6½ x 12 for heavy duty freight service.

Now emphasizing the same superior riding qualities that have been a feature of *National C-1 Truck design right from the start*, the new 6½ x 12 has increased strength in the important tension member*. And it can be furnished for use with all types of brake assemblies, including the Wabcopac.

Now no matter what criteria you use in evaluating freight car trucks — *the National C-1 Truck's got it: ride . . . strength . . . proven maintenance economy of less than 5 pennies per C-1 Truck over a 12-year service period.*

A-615...

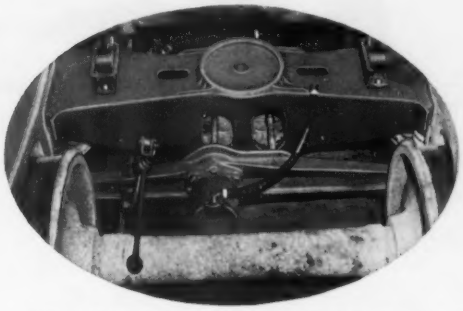
COUPLERS • YOKES • DRAFT GEARS

reasons for specifying

C-I TRUCKS

STRENGTH

*The new design tension member is a combination of inverted "U" section at the lower part and conventional "U" at the upper part. It reduces stresses up to 28% in lower part and up to 20% in upper part over conventional "U" sections of same size. In addition to considerable stress reductions a more even stress distribution throughout the whole frame is obtained with this new design feature.



If specified at time of order, optional 6 x 11 and 6½ x 12 truck bolsters can be supplied to accommodate the Wabcopac Brake Assembly.

Transportation Products Division

International Division
Cleveland 9, Ohio

National Castings Company of Canada, Ltd.
66 Portland St., Toronto 28, Ontario

NATIONAL CASTINGS COMPANY
Cleveland 6, Ohio

• FREIGHT TRUCKS • JOURNAL BOXES • ROLLER BEARING ADAPTERS • NATIONAL SPEEDLOADER CONTAINER HANDLING SYSTEM

ONLY

W. F. BOEKHOFF
visits 128 railroad facilities located in 94 cities . . . 20 states.

SERVICE ENGINEERING MANAGER
WALTER MORYTO

E. A. HUTSON
visits 74 cities, 15 states; visiting a total of 102 facilities.

ASF

You get service
from every dollar you spend with . . .

AMERICAN STEEL

Prudential Plaza, Chicago 1, Illinois

From ASF...

D. M. YOUNG
149 facilities located in 121 cities of 20 states.
L. W. BURKETT
covers 20 states to visit 130 facilities in 109 different cities.

this vital nationwide service to railroads

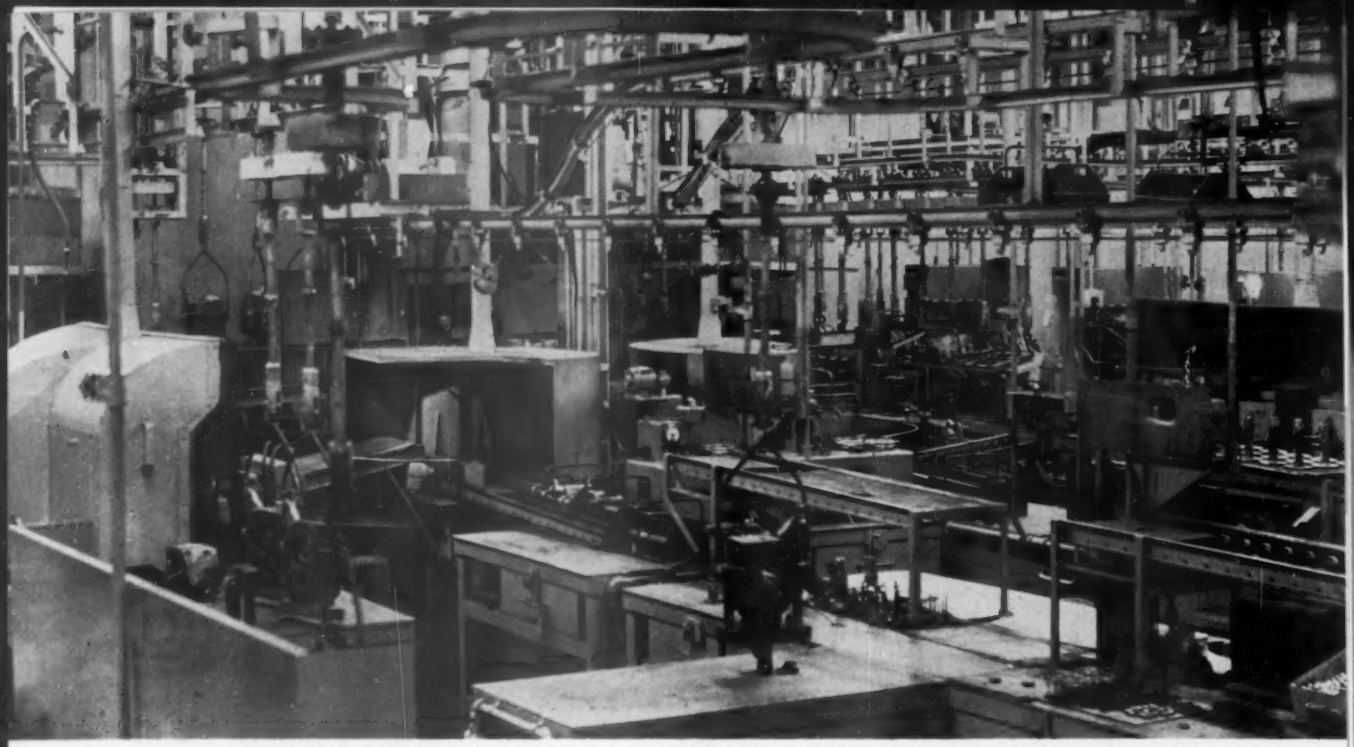
These men are trained Service Engineers employed by ASF *but they work for you!* To that end, each ASF Service Engineer regularly visits railroad facilities throughout his assigned territory, ready to serve in any way to help make the railroad man's job easier and more productive.

These regular visits account for more than 500 facilities visited in 46 states. Service Engineering Manager W. Moryto and his staff are always available for special calls or emergencies arising at any tine. NOTHING LIKE THIS SERVICE IS AVAILABLE ELSEWHERE!

FOUNDRIES

Canadian Manufacturer and Licensee: International Equipment Co., Ltd., Montreal 1, Quebec
Other Foreign Sales: American Steel Foundries, International, S.A., Chicago

PRI MEMBER



Overhead conveyor systems make it possible to utilize all floor space and eliminate need for lifting the heavy valve portions.

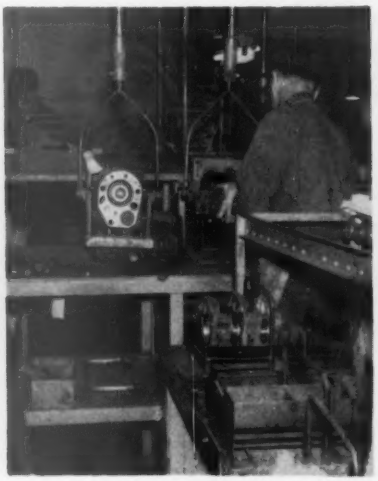
Pennsy Brake Shop Overhauls 200 AB

All freight-car air-brake-valve portions applied by the Pennsylvania are now overhauled at the road's recently completed and highly mechanized shop in Hollidaysburg, Pa. AB valve portions are cleaned, oiled and tested at the rate of 200 car sets—400 portions—during an 8-hr shift. Shop processes and equipment have been developed to comply with all AAR cleaning, gaging and test codes.

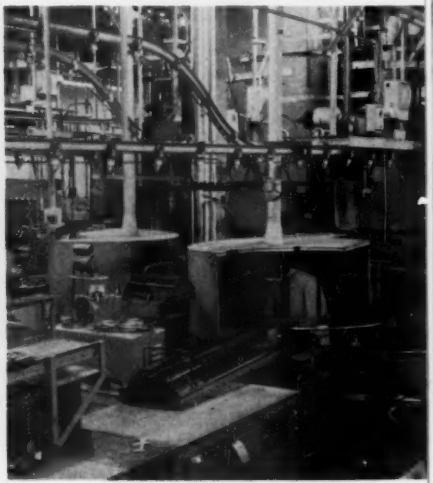
When the shop went into full production in January 1961, it made possible the consolidation at Hollidaysburg of work previously done at five separate points on the Pennsylvania system. The new centralized air-brake shop is located at the Samuel Rea Shop, the huge PRR freight-car heavy-repair facility which was opened in 1955 (RL&C, Nov. 1955, p 39). All AB portions are moved to and from other repair shops and light repair tracks on the PRR in specially designed shipping containers which can be handled by fork lifts and overhead cranes.

Because of the repetitive nature of the operations involved in the periodic overhaul of AB service and emergency portions and because of the large volume of this work, Pennsy mechanical officers in 1958 began to de-

Portion is clamped in fixture. Carrier activates limit switches, showing this to be an emergency portion.



Portion is tipped so multiple-spindle wrench can remove three cap screws simultaneously. Parts removed are placed in special baskets.



Service portion parts are cleaned in ultrasonic machine at center; emergency parts, in machine behind it.

velop a shop which would incorporate the maximum practicable degree of mechanization. Freight-car building and repair programs at Samuel Rea Shop, a component of the PRR Altoona Works, generate a large volume of brake portions requiring cleaning overhaul, and testing. Altoona is at about the "center of gravity" of the Pennsylvania system, and movements of portions to and from this point, it was estimated, would involve less transportation than other sties.

The area in which the new production lines have been established is a section of the air-brake shop originally built at Samuel Rea. Because this bay is still used for overhauling cylinders, pistons, retainers, and other brake components for cars undergoing heavy repairs, it was possible to assign only about half the shop area to the AB valve overhaul operations.

A pair of almost duplicate facilities has been installed in an area 70 ft by 55 ft. One set of conveyors, jigs, benches, and tools has been arranged to process service portions exclusively. A similar arrangement on the opposite side is designed for the emergency portions. Because of the greater complexity of the AB service portion, it is necessary to devote slightly more area to service-portion overhaul operations.

After studying different methods of moving the brake portions through the sequence of operations, PRR engineers concluded that the roller conveyors used in many shops would not be suitable for the congested area and high production which was planned. The result is four separate overhead conveyor systems installed under the roof trusses which are approximately 14 ft above the floor. Both service and emergency lines have a pair of conveyors—the main loops capable of moving complete valves and valve bodies through the sequence of cleaning, disassembly, inspection, assembly, and testing; the others being of lower capacity on which small parts are moved in baskets from disassembly through cleaning and inspection to the assembly benches.

There are approximately 750 ft of overhead conveyor. About half of this is powered and all powered sections are cable driven. The main conveyors are powered only in certain sections. The small-parts conveyors are completely powered. Unlike the roller conveyors used in many railroad shops, this system has been designed to allow for only a minimum of "live" storage.

Along with the overhead conveyors, PRR officers summarize other innovations in their air-brake shop as follows:

- Valve exterior cleaning with soft abrasive;
- Valve disassembly with multiple-spindle wrenches;
- Automatic brushing of valve body gasket faces;
- Multiple jet blowing of valve body passages;
- Flowrator checking for flatness of slide valve seats;
- Valve assembly with multiple-spindle wrenches.

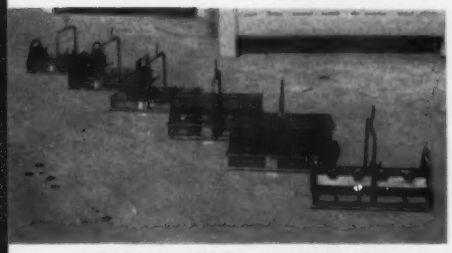
An important feature of this shop is that portions and portion bodies need never be lifted as they pass through the overhaul sequence. At all times the body remains in the work holding fixture suspended from the carrier on the overhead conveyor. The complete portion is placed in this fixture as it is removed from the shipping container at the entrance to the shop. All shop tools and fixtures are then arranged so that the body can remain suspended from the conveyor until it arrives back at the shipping area completely cleaned, lubricated, and tested.

In addition to complying with all AAR prescribed procedures and tests, the PRR aims to remove a minimum of metal from wearing surfaces so that it can obtain maximum service from bushings, valves, and similar components. All finishing and dressing of such surfaces is done only as a result of inspection. There are no mandatory machining operations with the exception of the slide valves which are all lapped on a pair of automatic lapping machines. Valves requiring new bushings are returned to the air brake manufacturers.

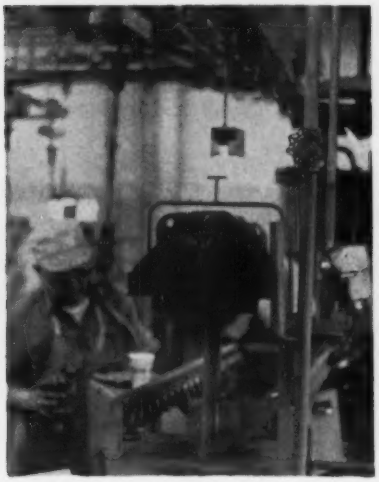
When the shop was designed for an output of 200 car sets in 8 hr, it was realized that it must be arranged to produce more than this. More thor-

(Continued on page 60)

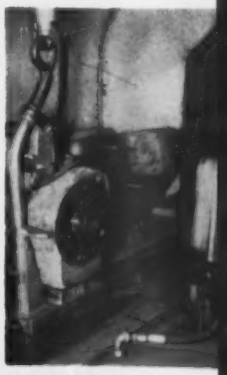
Valves Daily



Six baskets, all of same exterior design, are arranged to hold different valve parts.



Basket of cleaned parts is dropped to roller conveyor over the assembly bench after it is automatically removed from overhead conveyor.



Gasket faces are brushed automatically (left); blowing device cleans passages (right).

Flowrator checks flatness of slide-valve seat in bushing. Portion is never removed from the carrier or lifted at any bench.

That's the bold, new look at Screw & Bolt that says high strength HEAVY HEX BOLTS replace rivets—or two bolts now do the work of three! ■ *Imagineering* is also the foresight that puts right at your doorstep, in just one source, a multitude of threaded fasteners and parts such as frog, track and switch bolts—drive spikes and dowels—brake pins and shoulder bolts. Then, there's the widest range of regular nuts and bolts. ■ When you need a fastener or threaded part, think of *imagineering!* Call Screw & Bolt!

VMA 8417

SCREW AND BOLT CORPORATION
OF AMERICA • P.O. BOX 1708, PITTSBURGH 30, PA.

Plants: Pittsburgh, Pa. Gary, Ind. Southington, Conn. Norristown, Pa. • Warehouses: Portland, Ore. Denver, Colo. Atlanta, Ga.

Imagineering... for greater fastener progress

SOUTHLAND
LUBRICATORS KEEP THE SIGNAL GREEN*

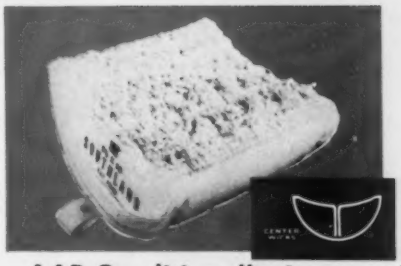
Southland Lubricator Pads are contoured to fit naturally and easily into the journal box and against the journal to assure safe, ample and economical lubrication under varying temperatures.

The highly oil resistant foam cores absorb and retain oil, creating a constant supply of oil to the myriad of looped lubricating wicks and onto the journal surface.

Southland Lubricators are extra heavily designed and constructed for long life and trouble-free service. Materials are super strong and quality craftsmanship builds positive economies into every Southland unit.

Easily installed; so efficient in service, Southland Lubricators are the natural and correct way to lubricate journals positively and economically.

We'll gladly send you detailed data on Southland Lubricators and explain the difference, **naturally.**



AAR Conditionally Approved

SOUTHLAND MFG. CO., INC.
700 Front Street, Norfolk 10, Virginia

In Canada
Dominion Railway Car Supply Co. Ltd. Montreal, Quebec

50% Longer Flange Life

New Electro-Motive Flange-Lubricated Traction Motor Support Bearing

an exclusive design now available at no increase in cost as part of EMD's new bearing conversion plan.

Fifteen years of research, laboratory and field testing have resulted in Electro-Motive's new controlled lubrication bearing, an exclusive design which provides 43% increased oil capacity, lengthening miles between refills, and 50% longer flange life.

- New narrow window wick utilizes newly developed, high-capillary-action one-piece felt which delivers uniform oil film to the journal surface, lowering operating temperatures, extending bearing life.
- Full flange lubrication is provided by four felt flange lubricators which gather and transmit oil to the flange face. Lateral movement of the axle or traction motor automatically applies the correct amount of oil to the wheel or gear hub.
- Reduced oil consumption is the result of a narrow window opening which virtually eliminates splash loss.
- Increased bearing capacity is made possible by thirty-three square inches of bearing surface added to the new unit, and movement of the window out of the lower load zone for extra bearing area and support.

NEW ELECTRO-MOTIVE CONVERSION PLAN

Now you can trade in worn traction motor support bearings and other brass scrap on new Electro-Motive flange-lubricated bearings by taking advantage of EMD's new conversion plan. The plan utilizes a straight weight conversion of worn bearings or equivalent scrap brass for new Electro-Motive flange lubricated traction motor support bearings at no increase in cost.

For complete information on the new EMD traction motor support bearing and bearing conversion plan, write Electro-Motive Division, La Grange, Illinois, or contact your nearby Electro-Motive Representative.

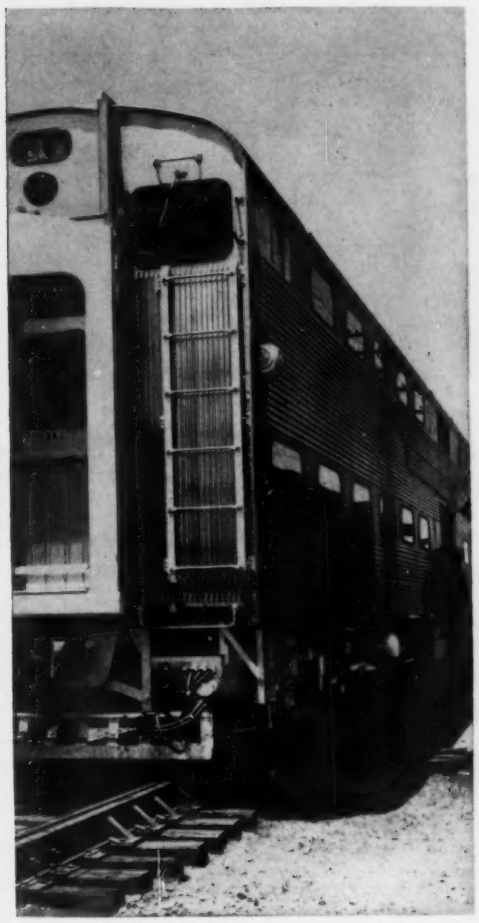
GENERAL MOTORS LOCOMOTIVES — RIDDED TO PROGRESS — RPI

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS · LA GRANGE, ILLINOIS
HOME OF THE DIESEL LOCOMOTIVE
In Canada: General Motors Diesel Limited, London, Ontario.

The Milwaukee Road has

COBRA® SHOES

on their new bi-level suburban fleet. Here's what The Road will get:



- Lowest shoe cost per mile
- Improved wheel performance
- Lightest-weight truck and brake equipment
- Freedom from thermal cracked wheels
- Satin smooth ride and stops
- Fewer replacements and lower maintenance costs

Equipping 40 new bi-level stainless steel coaches with Cobra Shoes makes it possible for the road to use lightest-weight truck brake equipment for its dual-control suburban train operations. Smooth, highly polished wheels provide best wheel to rail adhesion. Lower fuel costs, lower wheel costs, and Cobra Shoes mean lower operating costs for The Milwaukee Road each year. The coaches will ride better, too, because of the uniform braking characteristics of the Cobra Shoe, the smooth, highly polished wheels and the reduction of unsprung dead weight. Let our representatives give you more detailed information.

THE COBRA SHOE . . . a product of the combined research facilities of . . .

Westinghouse Air Brake Company
Specialists in Braking

Johns-Manville Corporation
Specialists in Friction Material

RAILROAD FRICTION PRODUCTS CORPORATION
Wilmerding, Pennsylvania

(Continued from page 53)

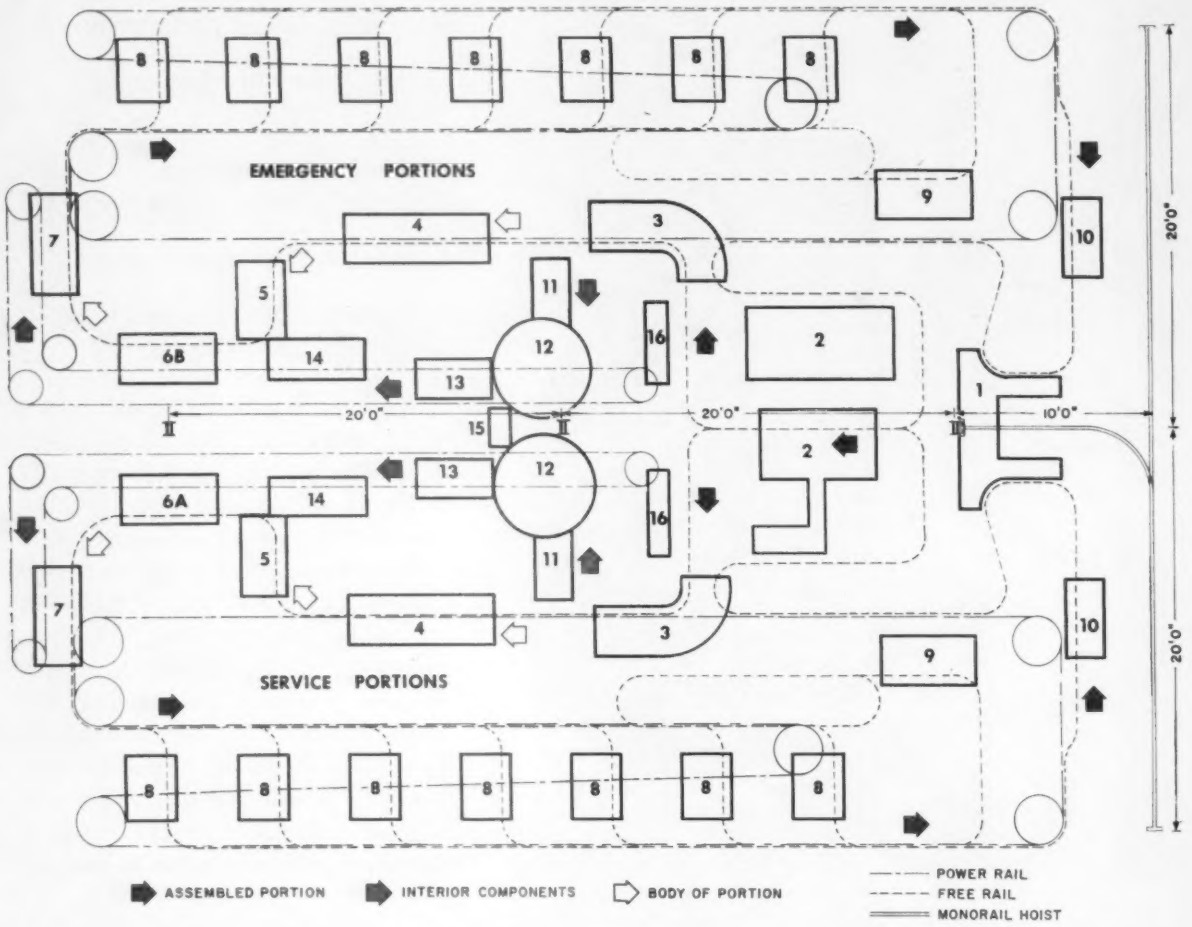
ough cleaning and the improved and more uniform inspection have reduced the number of portions which fail to qualify for return to service when initially placed on one of the test racks. Currently, this reject rate is running under 15%—much less than the rate which prevailed when the Pennsy operated low-production, unmechanized air-brake shops at several points on its system. In any case, the consequence of failure to pass rack tests is that the portion must be repaired—sometimes completely disassembled again. Such operations reduce productivity. Every effort is made to control work quality at every step to reduce rejects.

Test racks used are of the conventional manual type which incorporate all the devices required by latest AAR codes. Rack operators are able to repair or adjust many portions so they can successfully complete the test cycle without being removed from the rack. This was an important factor in not attempting to automate test rack operations, even though such equipment is now available.

"Automation" could not properly be used to describe this shop. Instead, it might better be designated as "highly mechanized," designed for maximum production per man-hour. There are 18 machinists and four machinist helpers on each of the two production lines. One lapping machine operator handles both service portion and emergency portion slide valves. This means a total force of 45 men for the one-shift operation. In addition, there are two machinist helpers on the second shift who sort, inspect, clean, and gage the gaskets, chokes, cap screws, and similar components removed at the disassembly benches during the day. Industrial engineering techniques were used to balance the work load at the work stations.

Operation of the shop is best understood by following the sequence of operations from the time a portion is removed from the shipping container until it is again placed in a container for return to a point where it will be reapplied to a freight car for another four-year term of service. While the service portion line will be used as the example, it should be understood that the emergency portion line is equivalent in every way, with the only differences being those which result from variations in the designs of the two types of brake portions. In fact, both types of portions initially travel over the same conveyor through the abrasive blast cabinet for external cleaning.

(Continued on page 62)



1. Unloading and loading station
2. Abrasive blast cabinet and dust collector
3. Disassembly bench
4. Cleaning and inspection bench
5. Piston and slide valve application bench
6A. Quick Service limiting valve bench
6B. Emergency ball check valve bench
7. Back cover application bench
8. Test rack
9. Rework bench
10. Shipping cover application bench
11. Parts disassembly bench
12. Automatic ultrasonic parts cleaning
13. Slide valve gaging and conditioning bench
14. Piston and slide valve assembly bench
15. Lapping machine
16. Parts container storage rack.

WORKHORSE—This Class M-4-2-8-8-4 locomotive, with more than 280 tons over its 63-inch drivers, had a total engine-tender weight of 1,138,000 pounds. One of 10 locomotives of its type, No. 228 was built for freight service in 1943. **Photo courtesy Duluth, Missabe and Iron Range Railway Company.**

ONE OF A SERIES

Legacy of Reliability

This rail giant shown steaming its way through the night was a symbol of dependability—truly a home-front hero in the 'round-the-clock crisis of World War II.

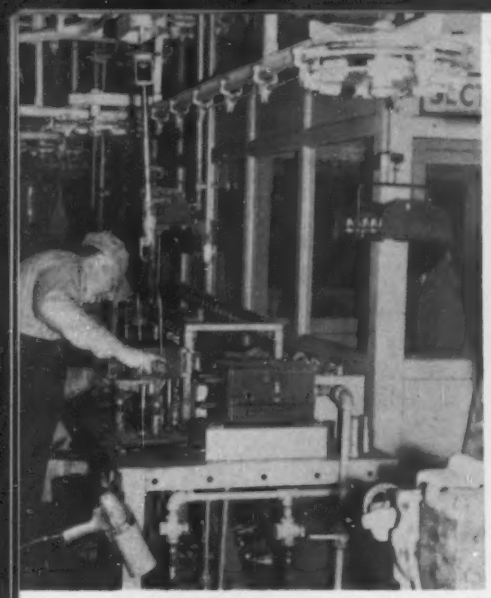
And in the same race against time, Ex-Cell-O Pins and Bushings were also hard at work, putting a solid measure of precision and reliability into the rolling stock of more than 200 U.S. and Canadian railroads.

Hardened and precision-ground Ex-Cell-O railroad details continue to keep pace with progress, just as the motive power of America's great railroads has kept pace with peacetime demands for greater efficiency.

Up-to-date heat treatment methods and fast, extremely accurate production machines make today's "diamond hard" Ex-Cell-O Pins and Bushings more dependable than at any time in their long history of reliability.

We invite your close inspection of the savings and service Ex-Cell-O can contribute to your maintenance program. Call our Representative in your area, or write direct to Ex-Cell-O in Detroit.

60-21



Applying back cover with multiple-spindle wrench completes emegrency portion assembly.

Portions may be repaired while on test rack, or portion moves to rework bench.

Shipping cover is applied at bench which has strainer cleaning device.

(Continued from page 60)

Carriers which travel around the main conveyor loop are at the loading station when they are emptied after having completed a cycle through the system. A machinist helper clamps each portion into the work holding fixture which is a part of the carrier. The shipping cover remains in place on the portion to protect it during abrasive cleaning. The system allows approximately 2½ min at each work station ahead of the test racks. The carrier with its portion in place is moved on to a powered section of the conveyor which takes it into an abrasive cleaning machine. Because both service and emergency portions travel over the same conveyor line, a series of mechanical switches determines which portion is in greatest demand on the lines and operates to feed that type through the cleaning cabinet first. The carrier moves to the center of this cleaning machine, stops, engages a driving chain which rotates it and its load for about 20 sec while a five-nozzle cleaning head travels down past the slowly turning portion. Crushed walnut shells are used for the abrasive, and the unit has its own dust collector. Portions emerge with their exteriors thoroughly cleaned.

Next, the service portion moves to a disassembly bench where two machinist helpers operate five multiple-spindle impact wrenches which remove the shipping cover and four other components which make it possible to completely disassemble the portion. These wrenches were all specially designed for their complicated bolt removal jobs. For instance, taking off the duplex release valve requires the simultaneous removal of two bolts and two cap screws. Other components which come off at this disassembly bench are the back cover, the quick service limiting valve assembly, and the check valve cover. Standard impact wrenches fitted with spline and screwdriver tools are then employed to remove all the chokes from the body of the portion.

Nuts and bolts automatically go down chutes into containers for transfer to the assembly benches. The gaskets and chokes are placed in individual containers for subsequent gaging and inspection to determine if they are reusable.

Parts removed during disassembly are placed in small baskets which move to the ultrasonic cleaner and then are picked up by the small-parts conveyor system and automatically delivered to the proper assembly bench. Individual parts baskets are designed to hold the following service portion components:

- Piston and slide-valve assembly;
- Check-valve case;
- Duplex release-valve parts;
- Piston return spring and cage;
- Back cover.

Each basket will hold from four to twenty of these components, depending on their size and shape. All baskets are of the same size and exterior shape. Some carry mirrors on their sides which are set to activate photoelectric cells operating mechanisms that remove the baskets from the conveyors at the proper assembly benches.

A short section of roller conveyor extends from the disassembly bench to the automatic ultrasonic parts cleaning machine. The filled parts baskets are placed on this conveyor and are then passed through the entire cleaning cycle with no further attention. An air-operated, indexing-type transfer mechanism picks each basket from the roller conveyor, rotates it to the ultrasonic cleaning tank, and submerges it for the 2½-min-cycle. It is then rotated an additional 90 deg and placed in a rinsing tank. The next cycle automatically elevates the baskets of cleaned and rinsed parts to a position under the small parts conveyor cable. A pick-up fixture, suspended from the cable, automatically picks up the baskets of parts and carries them to the appropriate work location where the parts are reassembled into the body. Baskets loaded with sets of four pistons and slide valves are automatically lifted from the rinse tank onto a short section of roller conveyor on which they travel by gravity to an adjacent bench on which the piston and slide valve operation is performed.

The ultrasonic cleaning machine was designed and built by the Pennsylvania, using a 40-kc generator and transducer. Cleaning and rinsing tanks each hold 20 gal of chlorothene. This solvent is continuously pumped from the cleaning tank, passed through an automatic distillation unit, and then delivered to the rinsing tank before returning to the cleaning tank.

On the bench where the piston and slide-valve assembly is reconditioned, the piston ring is initially checked to determine if it is free. Following dis-

Continued on page 68)

Freight Liner

PLASTA-GARD

Thirty to 50¢—you save this much on every journal with ADM's new PLASTA-GARD Strippable Plastic Coating. You save this much by eliminating the costly, messy, time-consuming operations of conventional journal cleaning. No scrubbing and wiping with solvent-soaked rags . . . no fire pots in winter to scorch journal

Even after long exposure to sub-zero cold or sizzling sunlight, this super-tough plastic peels off slick and clean in seconds. PLASTA-GARD stays flexible and strippable *permanently* — assures positive all-weather protection against rust and corrosion.

PLASTA-GARD also is ideal protection for drive and other machined-metal surfaces. Since it dries by evaporation (no catalyst is required), PLASTA-GARD can be applied at any temperature. Formulations for brush, spray, and dip-coat application are available. One gallon of PLASTA-GARD provides two-coat protection for about 60 journals . . . positive protection in any climate.

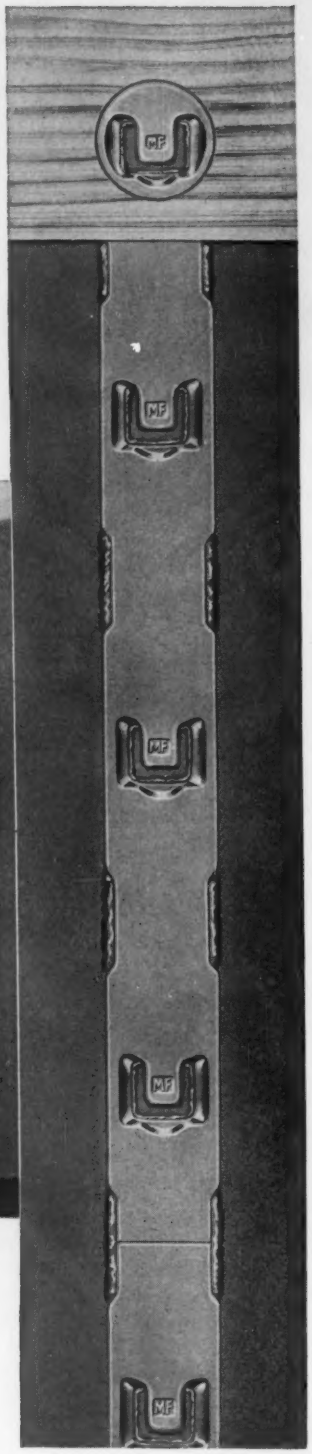
Investigate the important economy and convenience of PLASTA-GARD strip-coating today. Write, wire or call ADM for full information and a product sample.

Archer-Daniels-Midland

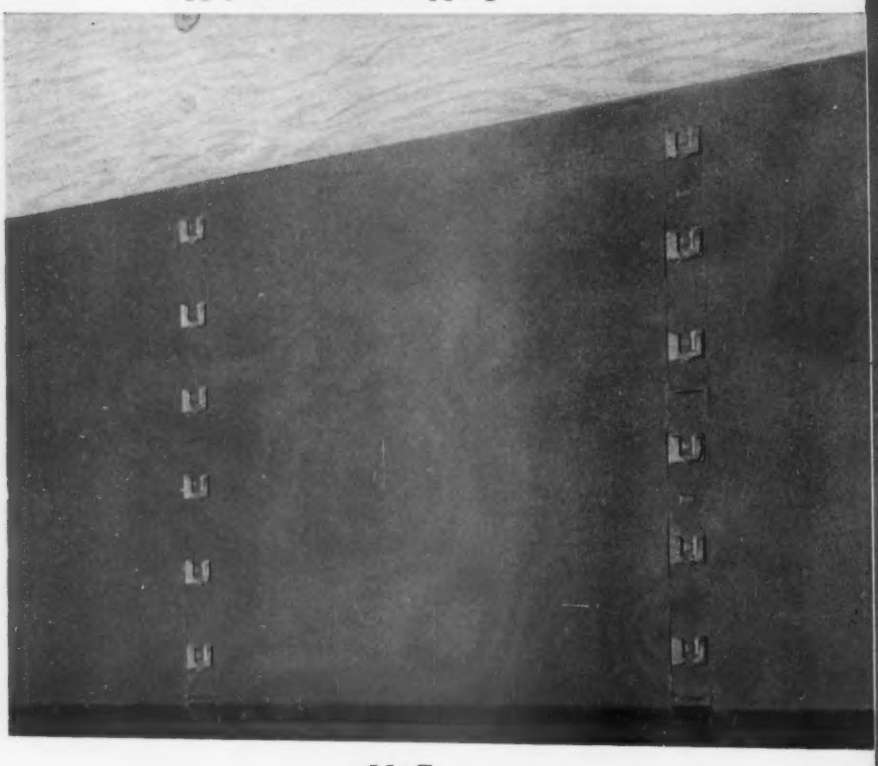
753 Investors Bldg. • Minneapolis, Minn.

FOR STEEL LINING

the M·F continuous bar anchor



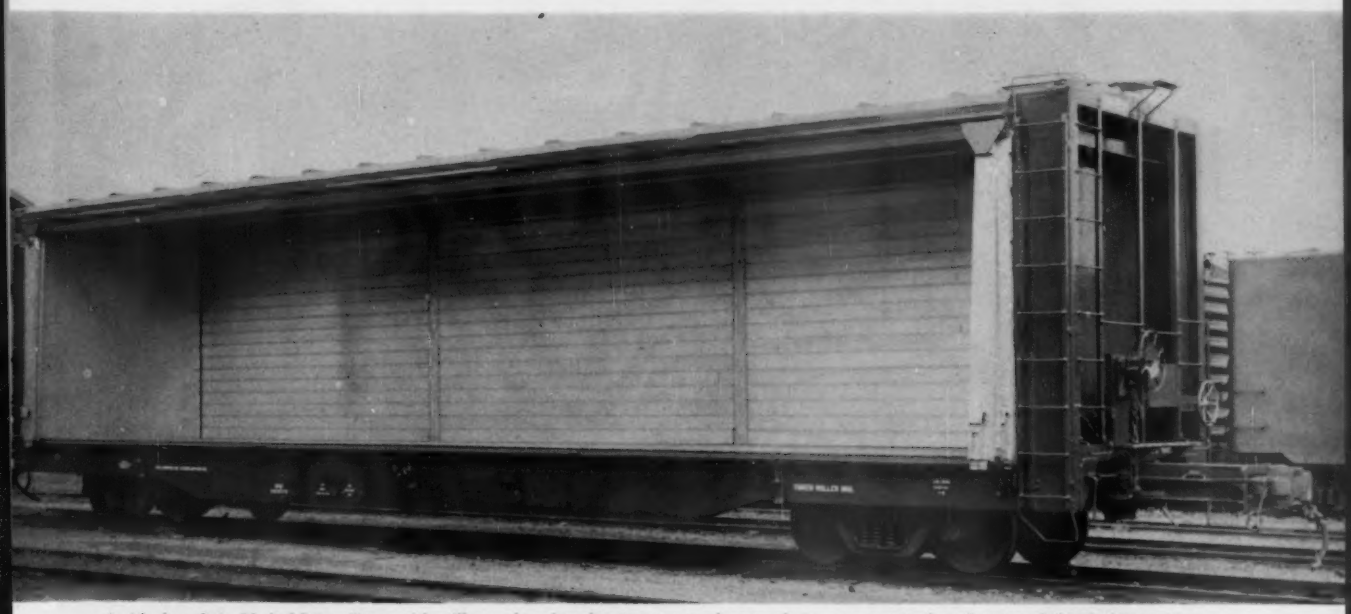
- *Welded to the Z-bar side posts between steel plate sections.*
- Furnished in multiple lengths — any variation of anchor style or location is available.
- M·F patented "tongue" anchors make it *easier* to apply or remove strapping.



AN **M·F** CAR IS A
MAINTENANCE FREE CAR

RPI MEMBER

MACLEAN-FOGG LOCK NUT COMPANY
5535 N. Wolcott Avenue • Chicago 40, Ill. • EDgewater 4-8420
IN CANADA: THE HOLDEN CO., LTD., MONTREAL



Inside length is 51 ft 10 in. Heavy side sills, roof and ends give structural strength to compensate for absence of fixed side posts.

Satisfying Shipper Requirements . . .

Southern Orders All-Door Box Cars

An all-door box car, recently built for the Southern by Pullman-Standard, is now undergoing service tests on the railroad. The clear door opening is 50 ft 6 in. when the garage-type aluminum side doors are raised into the ceiling and the aluminum door posts rolled to the car ends. Lumber, large machinery, and other hard-to-handle shipments which cannot be easily moved in and out of regular box cars can be loaded quickly from either side of the new car.

From an initial design by the Southern, P-S developed and built the general-purpose, all-door car adapted for mass production. "The new car type was designed and built with the shipper in mind," D. W. Brosnan, Southern's executive vice-president said. "It can be loaded as easily and economically as a flat car and carry its lading safely enclosed."

Doors on far side of car are operated by hand-wheel opposite the handbrake wheel. Doors on near side are raised and lowered by wheel at far end of the car.

The car is equipped with P-S Hydroframe-60 cushion underframe, providing 30 in. of hydraulic cushioning in either direction. End piers and reinforcements, sandwich ends, sliding center sill, body bolsters, crossbearers, and roof sheets are high-tensile steel. Remainder of the car structure is open-hearth steel, with all shapes and plates ¼ in. and less in thickness containing a minimum of 0.20% copper. P-S 1¾-in. high-strength nailable-steel flooring is used through the entire length of the car.

The car ends are a welded design. The assembled ends are welded to the pier plate, roof sheets and stationary center sill. The roof consists of ⅛-in. sheets welded to outside angle-type carlines and to the side and end plates. Carlines are spaced on 3-ft 5-in. centers for application of standard lengths of running board.

Each of the six overhead doors is

(Continued on page 68)

See the SKF exhibit at the Allied Railroad Supply Association Convention, Hotel Sherman, Chicago—Sept. 10 through 13 Booths 202, 203 and 204

Car maintenance costs slide to a new low with SKF "EXPEDITER" Roller Bearing Assembly

You can cut the cost of journal bearing inspection and maintenance and increase the efficiency and safety of your equipment by using the SKF "EXPEDITER" freight car roller bearing.

This bearing assembly is inspected and serviced at the car —eliminates the entire time and cost of removing wheels, breaking press fits and completely disassembling the bearing.

To inspect "EXPEDITER," you simply: (1) loop a wire over the side frame to the adapter; (2) jack up the side frame (to take the weight off the bearing); (3) remove cap bolts, plate lock washer and axle cap; (4) slide off the outer assembly by hand. Even the seal can be replaced this easy way, too.

"EXPEDITER" is competitively priced yet offers more features than any other anti-friction bearing. It conforms to all AAR side frame and freight car standards and is interchangeable with other bearing assemblies.

Write for "EXPEDITER" Folder #462.
7860

SKF MOTION ENGINEERING

Advanced ball and roller bearing technology

piggyback cars get

high wheel mileage

with Edgewater rolled-steel multiple-wear wheels

Edgewater multiple-wear wheels provide outstanding performance. Forged from solid steel blocks and rolled on the world's most-powerful wheel rolling mill, they have the dense, uniform grain structure that assures dependable service under heavy loads and high speeds. Their long life enables the user to take full advantage of the reduced maintenance costs offered by roller bearings.

We will be glad to give you facts and figures on the savings possible through the use of Edgewater multiple-wear wheels.

EDGEWATER STEEL COMPANY
P. O. Box 478 Pittsburgh 30, Pa.

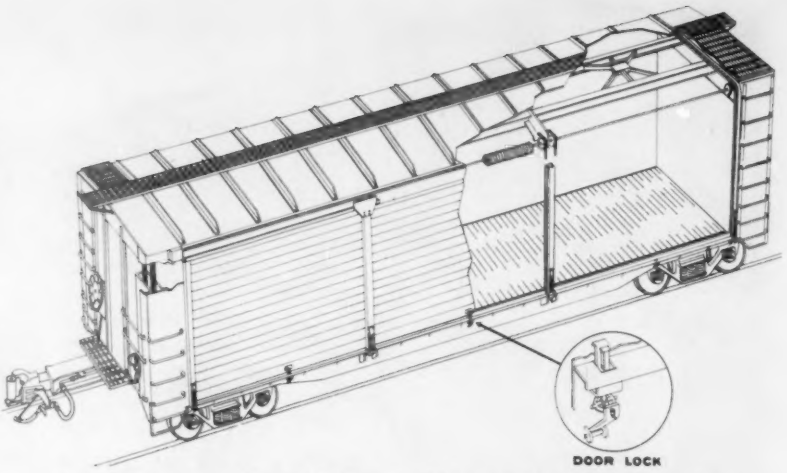
All-Door Box Cars

(Continued from page 65)

17 ft long, made of extruded aluminum sections. Door fixtures consist of heavy duty rollers and door tracks, door balancers, and locks. The four aluminum door posts are suspended by a trolley arrangement attached to the outsides of the side plates. Doors and posts can be swung out at the bottom and doors raised if the lading binds.

Inside height is 9 ft 3 in. and width, 9 ft 4⅛ in. Truck center distance is 41 ft 3 in. The narrow-pedestal type trucks have 3 11/16-in. spring travel and are fitted with Timken roller bearings and Stucki side bearings. Truck brakes are Wabcopac units with Cobra shoes.

Orders have been placed by the Southern for an additional 200 cars, with construction to start in September at the P-S Bessemer, Ala., plant.



Doors roll up under car's roof and side posts slide to ends to give full side opening.

These will differ from the prototype in that capacity will be increased from 70 to 90 tons and the light weight will be reduced from 100,900 lb to approximately 92,500 lb. Production cars will have 36-in., one-wear, heat-treated wheels mounted on 6½ x 12 smooth-turned axles with raised wheel seats.

PRR Brake Shop

(Continued from page 60)

assembly, a reconditioned slide valve is installed in place of the one just removed. The slide valve face has been machine lapped and the graduating valve seat lapped by hand on a lapping bar. The entire piston assembly is then rebuilt, lubricated, and passed to the adjacent assembly bench where it is again installed in the body.

To facilitate gaging, fitting, and seating pistons in the body bushings, the production system is arranged to deliver each piston to this assembly bench so it can be reapplied to the portion from which it was removed. All other parts are processed with no attempt to replace them in the portions from which they were originally taken.

While the internal components of the portions are being cleaned and inspected, the body travels from the disassembly bench to the cleaning and inspection bench where a high degree of mechanization has been achieved. Gasket faces of the portion are brushed automatically. The body remains on the conveyor carrier, and its base slides into a clamp which is mounted on top of a hydraulic cylinder. The cylinder moves the portion between a pair of brushes which clean the pair of opposing gasket faces. Upon the completion of this stroke, a third brush moves back and forth across the quick service limiting valve cover gasket face.

On the emergency portion production line, there is a similar arrangement, except that the third brush cleans the gasket face of the ball check clamps. Upon completion of this brushing, a second cylinder moves the portion into the multiple jet blowing device. Here three separate plates are automatically brought into contact with the three gasket surfaces which have just been brushed. Nozzles in these plates match all of the openings in the portion. Air at 100 psi is blown from the first of these sets of nozzles, while the other two plates are backed away from the portion so that air and dirt will be carried completely out of the passages. In sequence, each of the three plates is brought into contact with the gasket surface. This entire cycle is repeated three times so that each passage in the portion is blown six times, three times from each end.

Flowrator Inspection

The portion is then released from the clamp on the bench and moved to an inspection bench where a machinist uses the standard AAR gages for checking the piston bushing and slide-valve bushing. There is a visual inspection of all these machined surfaces. If bushings are found to be unserviceable, the body is removed from the carrier for return to air brake manufacturers for renovation.

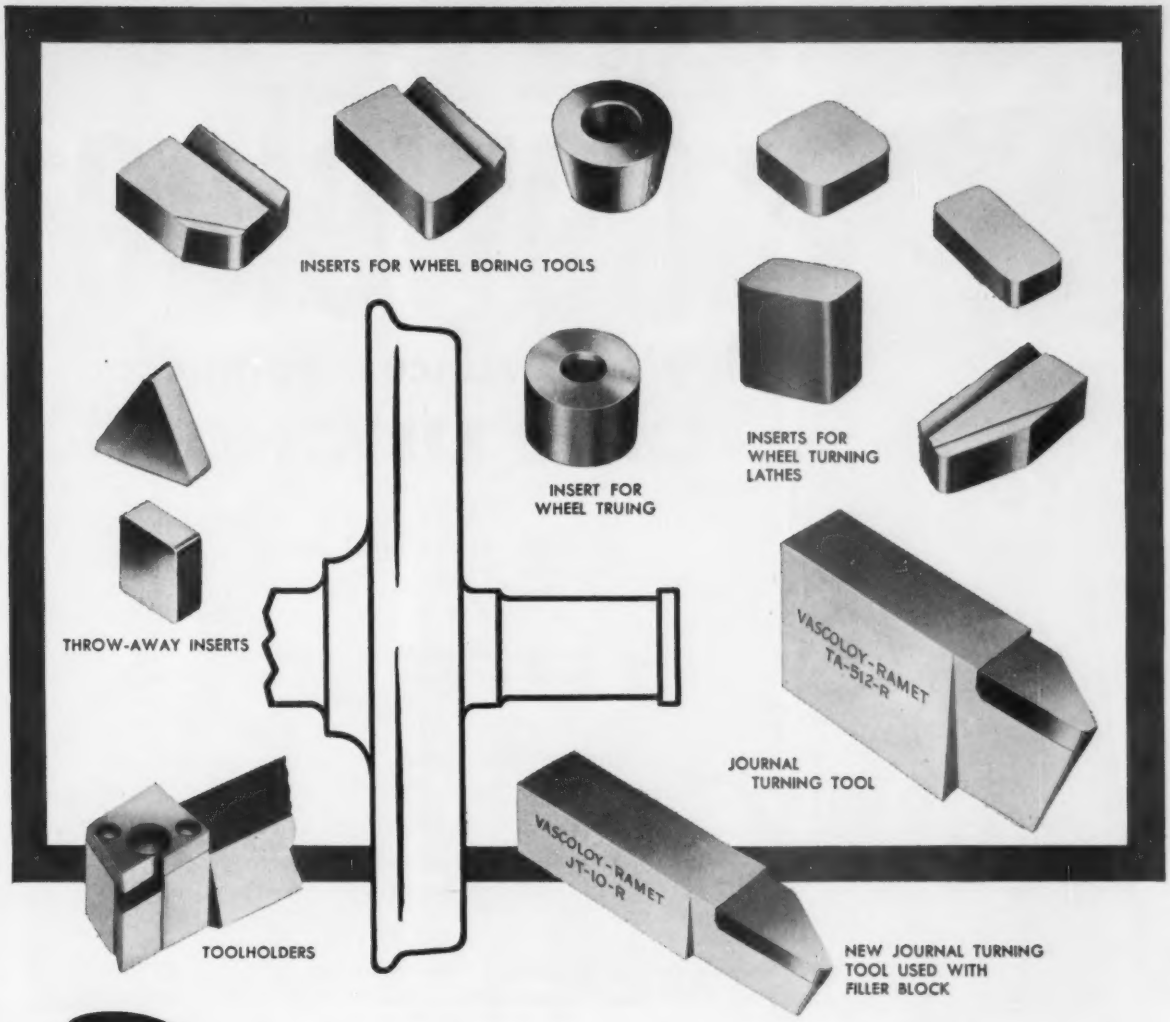
At the next station, another machinist applies a flatness gage to the slide-valve seat. This is a PRR-developed device incorporating a Flowrator which gages flatness by measuring the loss of air along the valve seat. If the Flowrator reading is high, the seat is dressed with an air-operated reciprocating tool using fine carborundum for the cutting compound. Another machinist at this bench installs clean chokes in the body.

The body then continues on the overhead conveyor to the next position—the piston and sliding-valve application bench—where this rebuilt assembly is installed. At the same time, the bushing slide-valve seat and wick-well are lubricated. A resistance indicator is used to check the friction resistance of the slide valve and piston.

The partially assembled portion then continues on the conveyor to the next bench — the quick-service-limiting-valve bench. Here a pair of multiple spindle impact wrenches are used for assembling the quick-service-limiting valve and duplex-release valve. A third multiple speed wrench is then used to apply these assemblies to the body of the portion.

At the next bench—the back cover application bench—a machinist ap-

(Continued on page 87)



V-R wheel and axle tooling provides superior machining performance

Write for FREE CATALOG . . .

For consistent, superior performance in your machining operations, you can depend upon V-R carbide. With over 30-years pioneering experience in carbide research, engineering and manufacturing, Vascoloy-Ramet exercises complete control of quality from ore to the finished product. The V-R line includes carbide inserts for wheel boring, wheel turning and wheel truing, journal turning tools and toolholders with throw-away inserts. Be sure to discuss your machining problems with your V-R representative.

See us at Allied Railway Show Booths 46-47!

CREATING THE METALS THAT SHAPE THE FUTURE

VASCOLOY-RAMET

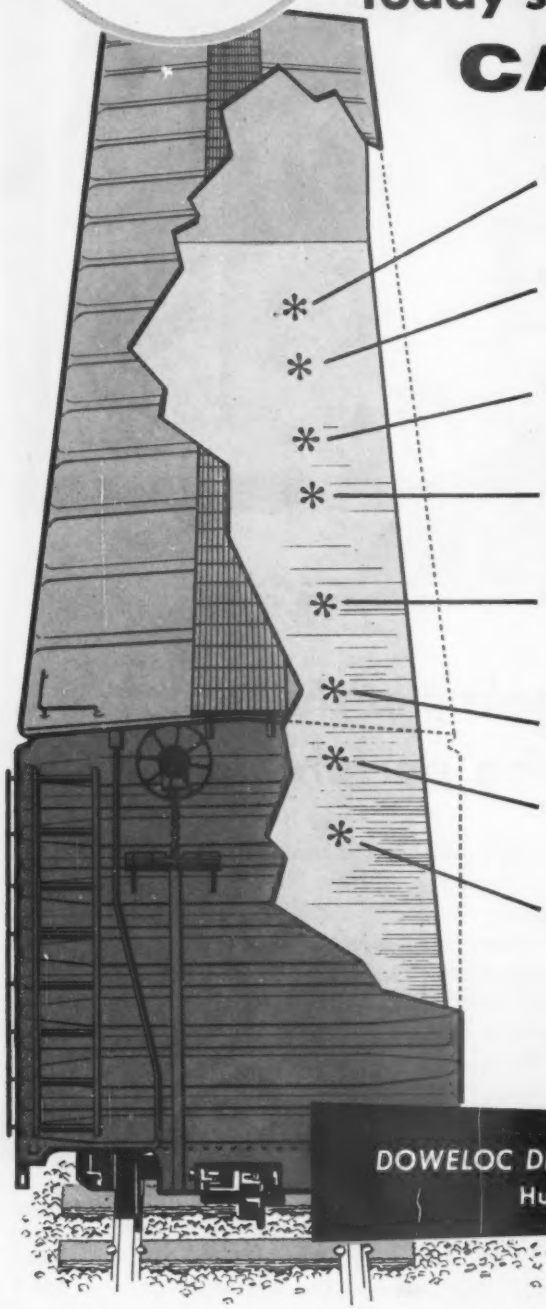
850 MARKET STREET • WAUKEGAN, ILLINOIS

R-814

More and more railroads are specifying

doweloc®

today's advance-engineered CAR DECKING



Long life under hard use — Because of laminated, vertical grain, hardwood construction, Doweloc panels stand up under many long years of hard service.

Practical dimensions — No waste or wood mill work with Doweloc. Panels are custom manufactured to exact car specifications . . . with thickness of 1¼″ through 2⅜″ . . . up to 12″ wide.

Smooth and clean — Sanded both faces, Doweloc's hard, smooth surface is good insurance against snagged, damaged cartons and other lading. Nail blocking anywhere.

Absolutely no shrinkage — Kiln Dried to 8-10% moisture content makes shrinkage unheard of — even after long exposure to weather and various kinds of lading.

Withstands the weather — Throughout every season...hot, cold or humid, Doweloc's unique fabrication gives you complete protection. There's no condensation — no rust. Provides great insulating qualities too.

Strong and tough — Takes fork lift abuse year after year with loads up to 25,000 lbs. per wheel. Won't dish — won't cup — won't corrugate.

Treatment — Through use of protective elements and special process, each Doweloc panel is stabilized and controlled against weather and rot. There's no odor — no residue.

Saves labor because it is manufactured to exact dimensions (tailored to your print) . . . quick and easy to install, Doweloc saves up to 50% of costly installation time. No sawing or fitting.

Write for special brochure giving complete engineering facts and figures.

See us at the A.R.S.A. Convention.

DOWELOC DIVISION — D. B. FRAMPTON & COMPANY
Huntington Bank Building • Columbus 15, Ohio

WIX RESEARCH FINDS THE BETTER FORMULA · · ·
WIX-BUILT MACHINES FORM THE BETTER FILTER!

WIX Series 4LM, 4129, 12700, 12800 and 12900M are now packed by the controlled density method.

WIX has advanced the filtration of Diesel Fuel and Lubricating Oil a giant step with filter cartridges wherein precise control of weight, density and dimensions provide an entirely new standard of performance. These new WIX cartridges represent an important contribution to operating economy and preventive maintenance. This family of advanced type cartridges is now available for all your diesel locomotives. Get the facts today!

Write for samples, prices and full information.

WIX Corporation, Dept. RLC
Gastonia, N. C.

Please send us full information on your controlled density Filter Cartridges.

Name_____

Railroad_____

Address_____

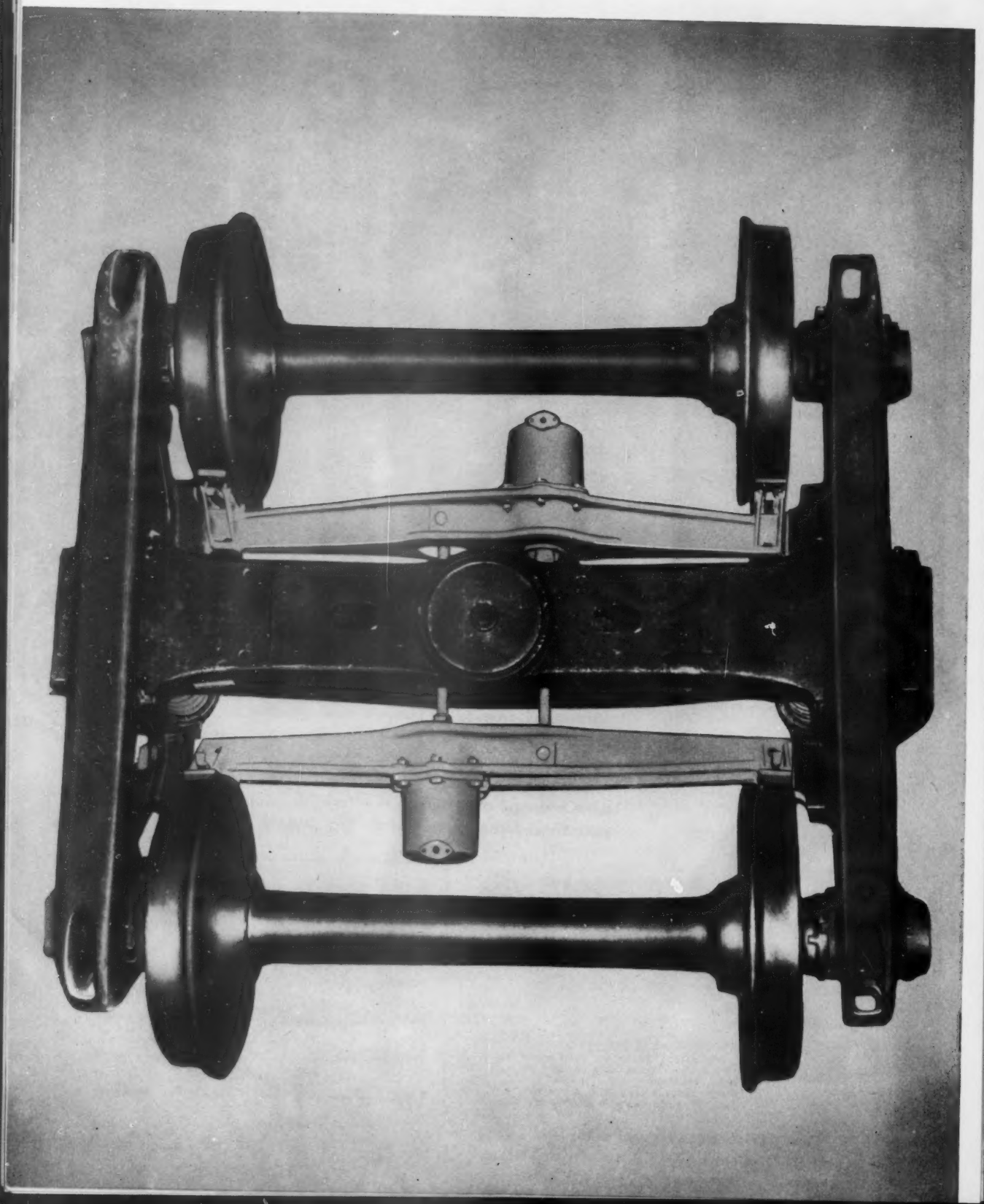
City_____ Zone____ State_____

WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto
In New Zealand: Wix Corp. New Zealand Ltd., Auckland

SALES OFFICES: Atlanta, Ga. • Jacksonville, Fla. • New York, N. Y. • Chicago, Ill. • St. Louis, Mo. • St. Paul, Minn. • San Francisco, Cal.

WAREHOUSES: Gastonia, N. C. • New York, N. Y. • St. Louis, Mo. • Des Moines, Ia. • Sacramento, Cal.

WABCOPAC® Simplified Brake Unit



assembles as truck component

The unique WABCOPAC Brake Unit, which consists of two assemblies joined by push rods that pass through openings in the truck bolster, offers car designers and builders greater flexibility with these important advantages:

LOW PROFILE—Lower profiles and greater car capacity are possible by elimination of conventional brake rigging from beneath the car body. The WABCOPAC Brake Unit has particular merit in the modern trend to specialized cars such as auto racks, containers, large tanks, piggybacks, hoppers, etc.

USES COBRA* SHOES—COBRA Shoe's frictional characteristics permit use of a single shoe brake and lower braking forces for the entire range of car weights. Complexities of clasp brakes are eliminated from freight car construction.

NO SLACK ADJUSTER REQUIRED—Piston rod travel is sufficient for full wear of the shoes, and shoe forces are always in balance. No inspection or adjustment required for the full shoe life.

**registered trademark of Railroad Friction Products Corporation*

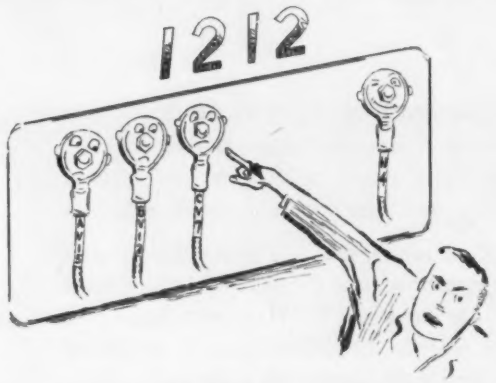
OTHER IMPORTANT FEATURES OF THE WABCOPAC BRAKE UNIT ARE:

- Assembles as a truck component—makes installation easier and less expensive.
- No additional levers, hangers or brackets are needed.
- Fewer pins—and hardened so they wear less.
- 2 WABCOPAC Brake Unit sizes—one fits 50-70 ton cars and the other fits 90-100 ton cars. (Empty and load brake arrangement available for both sizes.)
- Bolsters available with required openings.
- Identical braking forces on all wheels.
- Balanced forces on truck.
- Positive release.
- Less variation in rigging resistance.
- Lowers car weight.

Westinghouse Air Brake
COMPANY
AIR BRAKE DIVISION WILMERDING, PENNA.

One of 108 similar tank cars built by General American Transportation Corp. and equipped with WABCOPAC Brake Units.

The Finger of Suspicion



By Gordon Taylor

The four-unit F7 locomotive was at the head of a long freight train starting over the Hill Division. Dan Driver, the engineman, was thinking about a spot in those same hills where he would be hunting the following week.

As Driver pulled the throttle out to eighth position, he sensed that his train was slowing at a spot where it normally should have been picking up speed. A check through the four units showed engine speeds to be very irregular in the two units at the rear. Dan groaned. Already his locomotive was hunting and it certainly meant that this trip would be no picnic for him. "Let's see," he said, "if we can find what's making those engines hunt. This is no place for 3,000 horses to go lame; we need all 6,000 to keep this train on schedule."

The first thing to try was changing jumper cables. This seemed to solve the trouble; the engines on the two rear units resumed normal speed. "It was just a defective jumper cable between units," Dan declared.

His locomotive overruled this decision almost immediately. Again the two rear units were failing to respond properly. Again they acted normally after an exchange of jumper cables.

"This 'come and go' trouble must be due to some defect in the control wiring," Dan said. "It's puzzling that we should get even temporary relief by changing jumper cables. I'll write this case up 'strong' in my trip report for the foreman at Centerville shop." When the locomotive arrived at Centerville, the two rear units had been shut down completely. The train had been reduced to two-unit tonnage and was very late.

Doc Watts, the electrical foreman, hearing about the delays experienced on the trip, declared, "This locomotive will not leave here again until we know definitely that we have corrected the trouble. Let's check recent reports on these units."

The records showed that on the locomotive's previous trip into Centerville the three rear units had been in trouble. At that time a thorough check had revealed nothing. The units were even operated back and forth in the yard. Because that engineman's report had been rather vague, it was thought that some of his statements probably were not too accurate. After no trouble developed during the yard test, the report had been closed with the note "probably defective jumper cable."

"It must be control wiring trouble," Doc said; "inspect and test the control jumpers and receptacles." The receptacles were thoroughly examined; the jumper cables were all tested on the cable testing panel. Circuit continuity of each wire was checked; none of the wires were grounded on the cable plugs.

At that point one of the electricians reminded Doc that on the earlier trip three units had given trouble. On the last trip there had been trouble on only two. It was discovered that, on the former trip, Unit 1212 was second in the consist; on the last trip, it was operating in the third position next to the trailing unit.

"If," said Doc, "the trouble was in the wiring on the 1212, it could have affected three units last time and only two units today. The finger of suspicion points to 1212, but there's still a possibility that trouble in the control wiring bundle somewhere else might interfere with control messages reaching the 1212.

"Irregular speed control could result from such things as an intermittent open circuit in the A, B, or C governor control solenoids. This might involve control wires AV15, BV12, or CV7. Each of them must be a suspect. We mustn't overlook anything that would interfere with the ER relay which also controls the A, B, and C speed solenoids. I hardly think the control cable wire that feeds ER is involved. ER is fed from trunk wire FP16 which also feeds the fuel pump control on the trailing units. We've had no reports of the fuel pumps shutting down. Let's concentrate on faults that would affect the individual speed control solenoids."

The first test involved the four units connected in the regular manner and with all engines running. Standing at the shop, the engine speed control worked perfectly. "Now," said Doc, "let's carefully check the 1212, starting at the jumper receptacle at one end and going clear through to the receptacle at the other end."

The receptacle was removed and all its wire connections were found to be good. It was then decided to check all the terminal boards for loose wire control connections. The panel over the doorway at the end of the engineroom of this B unit was removed, uncovering the terminal board back of the jumper cable receptacle. Each wire leading from the receptacle to the board was given a slight pull to determine if it were broken. Attention was then given to the terminal board connections for wires AV15, BV12, and CV7. There was nothing wrong with these connections. "I want to know that every connection on that terminal board is clean, tight, and secure," Doc said.

Here the careful search paid off as the connection for the N4 wire was

This series of articles is based on actual experiences of men who operate and maintain diesel-electric locomotives.

tested. This wire, like the others, had a terminal lug that fitted over a terminal post stud where it was held by a nut and washer.

At some time during rewiring, someone had failed to provide this connection with a lock washer or double nut. Time and vibration had loosened the connection. The burned and corroded terminal was evidence of the heat generated at the loose connection.

As you know, the N4 wire runs through a multiple-unit locomotive when the jumper cables are in place. It serves as the return for all the control circuits. Any fault in the N4 wire can affect the functioning of any control circuit. The loose connection acted to insert resistance temporarily, reducing voltage so that contactors might not close properly, or might drop open if they had closed.

It was no wonder that there had been vague and indefinite reports about this unit. The thing that had fooled everyone, enginemen and maintainers alike, was that sometimes a change of jumper cables seemed to correct the trouble. At those times the locomotive's vibration had decreased so there was enough contact at the terminal board connection to establish a working control circuit.

To prove that the maintainers had found the real source of trouble, Doc had all the units connected for a regular service test. He then mounted a stepladder in Unit 1212 and moved the terminal lug on its post, producing results of the sort the enginemen had described. Doc had the terminal lug replaced with a new one and tightly secured with a new nut and lock washer.

"This case should be a lesson to all of us to be more careful in testing and trouble shooting," Doc reminded his maintainers. "Since this happened I recall that several times in the past the 1212 has been involved in delays and failures which were always said to be the result of defective jumpers. When 3,000 horses went lame several times, just as they were badly needed, it made us realize that we had unusual trouble.

"I know," Doc continued, "that Dan Driver would rather be out with bird hunters than with a hunting engine. We have probably insured that his next hunting episode will be next week when the wild turkey season opens. It shouldn't be on the 1212."

Diesel Hydraulic

(Continued from page 27)

ers, longer rigid wheelbase, lighter axle loading, and almost universal use of roller bearings—made difficult precise comparison with actual running resistance of U.S. trains. While calculations had indicated a speed of 14 mph on the section where uncompensated curves made the resistance equivalent to a grade of 2.7%, the locomotive operated at speeds of 16 to 20 mph with a 965-ton train.

Performance of the hydraulic transmission was watched closely. Automatic changes in operating range are made by a hydraulic control circuit which fills the appropriate converter in response to locomotive and engine speeds. Emptying and filling of the converters is overlapped during changeover to eliminate loss of power; during Semmering tests the change could be spotted on the recording instruments in the dynamometer car, but was virtually impossible to detect otherwise.

The only slippage occurred on wet rail after a night of rain. The automatic sanders were disconnected at the time. U.S. observers later said that the slipping, even under these conditions, was not severe enough to be important.

In March and April dynamometer car tests were made by the German Federal Railroad with one of the Rio Grande locomotives. It is German practice to use braking locomotives instead of an actual test train. This makes possible precise control of loading during tractive-effort tests; the locomotives can also provide power during braking tests.

A maximum starting tractive effort of 106,000 lb was measured with locomotive weight reduced to 152 tons. During the test there was no evidence of transmission or engine overheating.

Using steam locomotives to provide the propelling force, the hydrodynamic brake was tested. The resulting braking curve is a sharp parabola reaching a peak of approximately 47,500 lb at 26 mph. With full braking power, two of the heaviest German steam freight locomotives were unable to accelerate beyond 19 mph when coupled to the diesel-hydraulic locomotive. In another test the locomotive slowed a train of 715 tons from 50 mph to almost a standstill in 875 yd with dynamic braking alone.

THE
MAGNUS
METHOD

For more than 40 years, Magnus Chemical Company has maintained its leadership in the cleaning field by offering this unique time-and-cost-cutting combination:

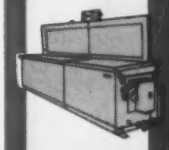
CLEANING CHEMICALS

Over 300

Magnus produces a complete line of specialized chemicals — formulated to work independently in solving your cleaning problems or in perfect combination with

CLEANING EQUIPMENT

Over 100 Types



Magnus also manufactures more than 100 types of automatic and semi-automatic cleaning machines, each designed specifically to work with Magnus chemicals to produce better cleaning results at lower cost.

CLEANING METHODS

World-Wide Representation

magnus

Because of its complete selection of chemicals and equipment, Magnus Sales-Service Representatives are free to recommend the method best for you . . . modern methods to meet modern problems.

SEND FOR FREE SURVEY FORM

Magnus will assess your cleaning operation — without obligation — and show you how to cut costs and speed production in your individual shop.

magnus
Chemical Co., Inc.
77 South Avenue
Garwood, N. J.

Please send FREE information on Magnus time-and-cost-cutting cleaning methods.

Name_____

Company_____

Position_____

Address_____

City_____ State_____

CM METEOR
Wire Rope Electric Hoists...for heavy overhead handling. 1/2 to 5 tons. Single or two speed. Plain, geared or motor driven trolley.

RUGGED CM® HOISTS
FOR GENERAL SHOP USE AND REPAIR FACILITIES

CM LODESTAR
Electric Chain Hoists ...ideal for truck handling in spot car repair facilities and for general shop use. 1/8 to 2 tons. Hook or trolley suspension.

CM CYCLONE
Hand Chain Hoists...for shop service & maintenance. 1/4 to 10 tons. 1 ton weighs only 36 lbs.

CM PULLER
Ratchet Handle Hoists...a versatile tool to lift, pull, drag and stretch in car repair and shop maintenance. 3/4 to 6 tons. 3/4 ton weighs only 14 lbs.

CM HOISTS

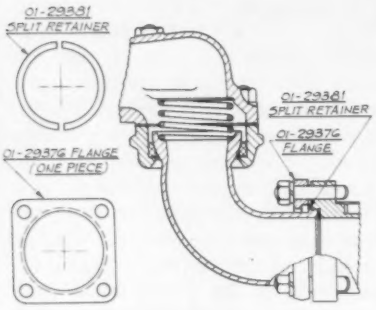
Send for Bulletins and name of local distributor

CHISHOLM-MOORE HOIST DIVISION
Columbus McKinnon Corporation
Tonawanda, New York
quality, dependability and safety for more than 75 years

What's New

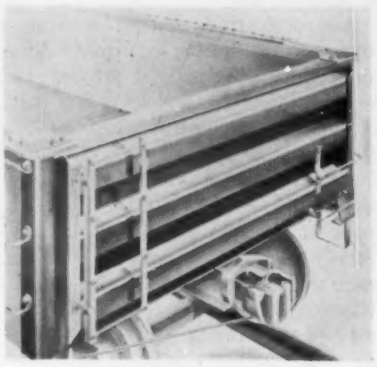
(Continued from page 14)

across the filters. Under continuing use, the pressure drop will increase as much as 15 psig when the filter is loaded to capacity. Over 350 sq ft of positive filtering surface is provided by each kit. Filtering media is unaffected by high temperature, moisture, or viscosity change of the lube oil, and will not interfere with the function of lube-oil additives. *Farr Co., Dept. RLC, 2301 Rosecrans ave., El Segundo, Calif.*



Steam Connection

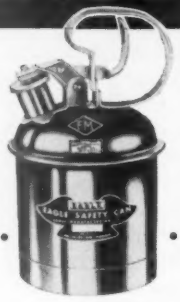
A solid forged flange with two-piece split retainer ring supersedes the split flange formerly used on Barco 2½-in. steam-heat connections. This change is said to reduce maintenance. *Barco Manufacturing Co., Dept. RLC, 500-530 North Hough st., Barrington, Ill.*



Fixed Gondola Ends

The F-B fixed end, said to give more strength and durability to gondola cars, is constructed of $\frac{5}{16}$-in. Cor-Ten steel. Ends are corrugated from corner post to corner post, and are reinforced with formed W sections welded along the sides where they fit into the corners of the car. The W section, of the same type successfully used in box car ends, not only adds rigidity to the ends, but also to the corners of the car. The ends come in standard sizes, weighing about 595 lb each, or can be purchased in odd-size widths. *Youngstown Steel Car Corp., Dept. RLC, 1600 Hunter st., Niles, Ohio.*

Quality cans
EAGLE SAFETY CANS

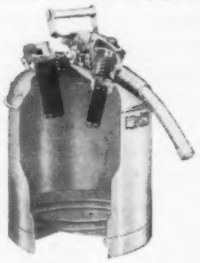


- The approved *safe* way to handle flammable liquids
- Listed by Underwriters Laboratories
- Approved by Factory Mutual
- Uncommonly rugged for hard use
- 'The Complete Line'

STYLE I STORAGE CAN
1 qt., 2 qt., 1 gal. sizes with trigger-grip handle . . . 2½ gal., 5 gal. sizes with free-swing handle . . . valve operated by handle gives positive pouring control . . . no waste, no splash, no spill . . . strong quality construction.

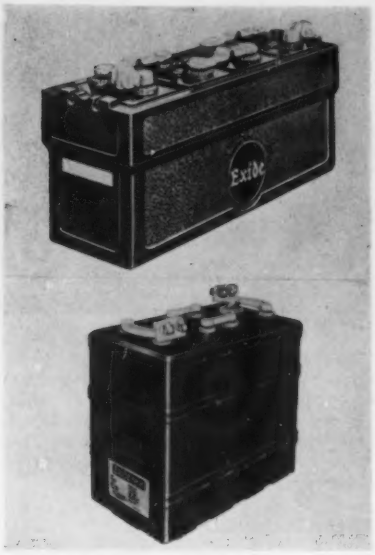
ORDER FROM YOUR SUPPLIER

STYLE II FILLER-DISPENSER CAN
2½ gal., 5 gal. sizes with free-swing handle...flexible spout for easy pouring . . . body and breast each seamless drawn from heavy 24-gauge steel . . . steel hoop reinforces bottom . . . fire screens in pour spout and filler opening for double fire protection.



Write for free catalog showing Complete Eagle Line

EAGLE MANUFACTURING CO. Wellsburg, W.Va.
Serving Industry Since 1894



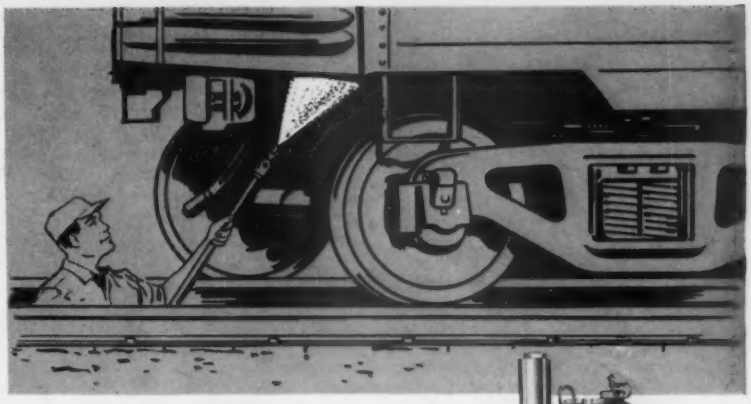
Car and Locomotive Batteries

The KGM Exide-Ironclad battery is a low-profile model used for diesel starting as well as for caboose and refrigerator car applications. Its armored porous tubing is said to provide 12% more current capacity than the former Model KX. It is rated at 22.4 amp hr per positive plate and is available in sizes from 63 to 231 AH at the 8-hr rate of discharge. Additional electrolyte (about 1 in.) above the plate is said to reduce maintenance by lengthening the interval between waterings.

The EG Exide-Ironclad, with 25% more electrical capacity than the former EH model, is lighter in weight than any other lead-acid battery of comparable capacity for passenger-car application, saving up to 616 lb per car. *Exide Industrial Marketing Div., Electric Storage Battery Co., Dept. RLC, Rising Sun and Adams aves., Philadelphia 20, Pa.*

Automobile Unloader

The Model TULCR automobile unloader, is "rubber-mounted" on 15-in. wheels and equipped with air brakes and a telescoping tongue. It can be towed by truck or tractor around a macadamized yard and brought up to either end of a car. It can also be used where no spur or dock is available and with the multi-level railroad cars having their lower decks 38 in. above the track. Ramps, manually operated by a 1-in. power wrench or crank, raise up to 14 ft 7 in. Power-operated ramps can be supplied. The hitch of the 16,200-lb unloader can be lifted by one man. Wheels retract hydraulically and rest on adjustable leveling outriggers when in use. *Buck Equipment Corp., Dept. RLC, 720-X Anderson Ferry Road, Cincinnati 38, Ohio.*



Now... application of heavy mastics is as easy as HYDRA-SPRAY painting!

with **GRACO HYDRA-MASTIC**

Typical cut back and emulsified car cements can now be sprayed *without atomizing air.* Result . . . heavier coatings are applied with a minimum of cratering and pinholing. Overspray is eliminated and inside corners are covered easily. Benefits . . . extra protection against corrosion and abrasion . . . extremely fast application . . . and clean, sharp spray pattern.

New Graco Golden-Gun is lightweight . . . requires only one hose to gun.

New Reversa-Clean Spray Tip eliminates clogging problems . . . can be cleaned in seconds.

See your Graco Representative.

GRACO **RAILWAY DEPARTMENT**

GRAY COMPANY, INC.
MINNEAPOLIS 13, MINNESOTA

JOHN P. McADAMS, Eastern Sales Representative
2304 Wilson Boulevard, Arlington, Virginia

CHICAGO—(Broadview, Ill.)
R. D. Worley
3030 South 25th Ave.

CLEVELAND
M. H. Frank Company, Inc.
1202 Marshall Building

HOUSTON
Houston Railroad Supply Co.
1610 Dumble Street

PHILADELPHIA
The A. R. Kidd Co.
1036 Suburban Station Bldg.

LOUISVILLE
T. F. & H. H. Going
6308 Limewood Circle

ST. LOUIS
The Carriers Supply Company
818 Olive Street

NEW YORK—Newark, New Jersey
R. A. Corley
744 Broad Street

SAN FRANCISCO
The Barnes Supply Company
Rm 504, 74 Montgomery Street

TWIN CITIES—St. Paul, Minn.
The Daniel L. O'Brien Supply Company
Endicott-On-Fourth Bldg.

WASHINGTON—Arlington, Va.
Southeastern Railway Supply, Inc.
2304 Wilson Blvd.

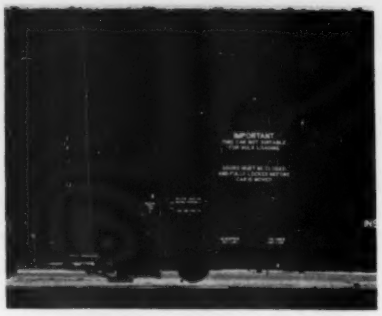
MONTREAL—Ontario, Canada
International Equipment Co., Ltd.
360 St. James Street West

Nailable Steel Flooring

The flat-surface and rib surface styles of Nailable-Steel-Flooring, which combines the strength and durability of steel with the nailing advantages of wood, are available in a variety of gages. The flooring will support the heaviest freight-car loading equipment. It is made of columbium-treated, mild carbon, high-tensile GLX-W steel in 8-in. wide channels welded into panels. The nailing groove permits blocking to be nailed directly to the steel floor. The self-sealing mastic filler in the nailing groove flows together to fill nail holes and remains plastic, keeping floor tight through its life. The flooring can be installed as original equipment or as replacement flooring. *Stran-Steel Corp., Dept. RLC, Detroit 29, Mich.*

Double Flush Doors

Double sliding flush doors improve mechanized loading and unloading of lumber and other bulky and palletized commodities. The doors, fitted with rubber gaskets,



are flush with the car sides when closed. They are locked in closed position and braced against bulging loads, and automatically locked in open position by spring latches. For hauling grain, separate grain doors are unnecessary. *Youngstown Steel Door Co., Dept. RLC, The Arcade, Cleveland 14, Ohio.*

Now Available

Motor Wheel

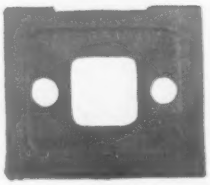
Journal Box Lids with OIL SEALS

- Certified by A.A.R. to latest specifications.
- Completely Seal Journal Box Face.
- Easily Installed and Easily Serviced.

Exhaustively tested for two years, Motor Wheel Pressed Steel journal box lids with Neoprene seals still provide a complete seal at the end of the tests! One major road now has 1,500 hopper cars equipped with these lids and seals.

Motor Wheel Oil Seals are Neoprene closed cell rubber skin both sides. They are held tightly against the lid by a solid stamped retainer plate, fastened by two standard bolts, nuts and lock washers. Combined with Motor Wheel's exclusive "Constant Pressure" compression spring, 40 to 65 lbs.-per-sq. inch lid pressure makes a complete seal at the face of the journal box.

AVAILABLE in 5 x 9 or 5½ x 10 and 6 x 11 SIZES. Replacement seals and retainers are available from Motor Wheel, and require less than two minutes to install.



Write For New Catalog Of Railway Products

MOTOR WHEEL Corporation

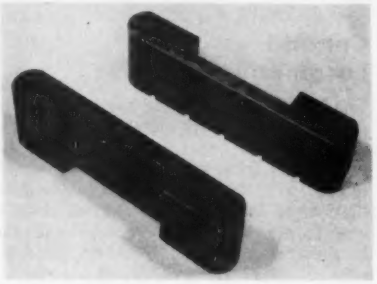
LANSING 3, MICHIGAN

11

National Sales Representative

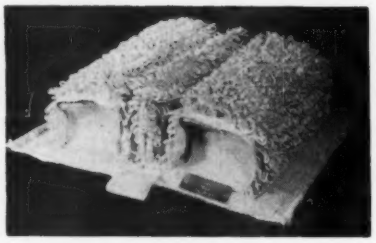
T-Z RAILWAY EQUIPMENT CO.

8 S. Michigan, Chicago 3, Illinois



Journal Stop

The George journal stop, made of a non-metallic material, is said to be highly resistant to severe impact. It is available in two designs—for rib-type boxes (left) and; for non-rib type (right). Bolts, shims, washers, locking devices, special tools or welds are not required for application. The stop is being considered by the AAR for use in interchange service. *Journal Box Servicing Corp., Dept. RLC, Chicago 4.*



Journal Lubricator

The center feed principle of supplying oil to the journal is used in the Crest lubricator. One-third of the pile fabric composes a center wick which carries oil from the bottom of the box to the rotating journal. Resilient foam in two longitudinal pockets assures continuous contact between the lubricator and the journal. The center wick and the pockets which support it are sewn onto a "pad stabilizer" or base platform made of two layers of oil-absorbent cotton duck fabric. Between these layers is a thin layer of polyrethane

CHECK √ DIESEL ENGINE WEAR

Plastic Vials Furnished Gratis for Sample Transmittal

LET OUR Quantometer Laboratory analyze your Lubricating Oils Accurately for those chemical elements which indicate the presence of Wear Metals, Road Dirt and Water Leaks. **Volume Analyses Handled Efficiently at Surprisingly Low Cost.**

Teletype PG-544,
Phone FRemont 1-2345
or
Write today for complete information

SPECTROCHEMICAL LABORATORIES, INC.
P.O. Box 8781, Pittsburgh 21, Pa.

foam. A 1½-in. wide nylon pull strap at the center of the pad is for removing the lubricator from the journal box. *Callaway Products, Inc., Railway Products Div., Dept. RLC, 295 Fifth ave., New York 16.*

Hydraulic Cushion Underframe

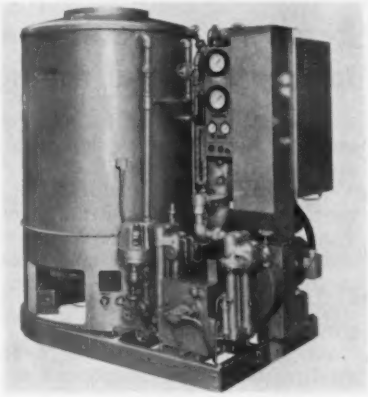
The Keystone "20" Shock Control gives protection against lading damage and protects the car by preventing direct transmission of impact energy from the center sill to the car body. The three principal components are a double-acting hydraulic cylinder for absorbing impact energy (above); two sets of return springs (one at each end just inside the bolsters), and a floating center sill with up to 20 in. of travel. The sill houses both the hydraulic cylinder and the return springs. Kinetic energy is dissipated in the hydraulic cylinder by the action of the piston forcing oil through several small orifices at high velocity. The underframe can be readily installed in any new freight car without changes or additions that would cause the car to be regarded as special or to be handled in any way other than as standard equipment. *Keystone Railway Equipment Co., Dept. RLC, 80 East Jackson Blvd., Chicago 4.*

Car Lining

The Mortell carliner for upgrading box cars and reefers and for lining trailer interiors is a light tan, prefinished paneling having a smooth, high-gloss surface. It is said to resist abrasion, nailing, and impact without splintering, and can be washed, dry-cleaned or steam cleaned without deterioration. The epoxy coated surface is said to be odorless and non-toxic and will not absorb oil, grease or lamp black. Panels, available in 4- x 8-ft and 4- x 9-ft sheets, are fastened by stapling or nailing. Eleven sheets upgrade a 40-ft box car to 4 ft height. Trimming can be done with a hand or power saw. *Mortell Co., Dept. RLC, Kankakee, Ill.*

Mastic Spray Unit

The "airless" Hydra-Mastic spray unit is a completely new system for continuous spraying of filler-type mastics. Plastisols, asphalt base coatings, and mastic compounds can be sprayed with a single hose. *Gray Co., Dept. RLC, 60 11th ave., N.E., Minneapolis, Minn.*



Steam Generator

The Clayton steam generator is available in five models in capacities of 500, 1,000 1,650, 3,000, and 5,000 lb of steam per hour. It is of the forced circulation, balanced feed, single water-tube design arranged for complete automatic operation. A minimum performance test of 80%, and a 75% minimum thermal efficiency under variable altitude conditions is attainable, according to the manufacturer. Automatic controls for the regulation of steam, fuel, and water pressure are said to prevent superheating which results in melted hose connections. Safety controls are provided for excessive steam pressure, low water, electric,

(Continued on page 81)

Frost's *Insulcote!*

UNION PACIFIC IS ONE OF MANY USERS OF FROST'S INSULCOTE

Here's the practical, economical way to prevent sweat damage to lading...

Now it is possible to apply a quick, economical coating to metal boxcar roofs that will assure a permanently dry surface.

Insulcote, an emulsion-type plastic coating for metal boxcar roofs, actually *absorbs* moisture preventing condensation that can result in sweat damage.

Insulcote bonds to galvanized metal surfaces under any conditions . . . without preliminary acid treatment of surface. It is not affected by mineral solvents and fumes.

Another big advantage of Insulcote is ease of application. One man can undercoat the roof of a 40-foot boxcar in less than 15 minutes. Insulcote can be applied with heavy-duty spray gun equipment. It is safe and clean . . . and presents no fire hazard.

Available in 5-gallon steel pails and 55-gallon open-head steel drums. Write for free booklet.

other FROST RAILWAY SPECIALTIES

NO-RUST Car Journal Compound **VERNIX** Floor Hardener
SURE-FOOT Non-Slip Paint **FROSCOTE** Floor Covering

Frost PAINT & OIL CORPORATION
1209 N.E. TYLER
MINNEAPOLIS 13, MINNESOTA

Here's the *latest* equipment for

Precision NOZZLE RECONDITIONING

It's from Hartridge, naturally! Three new units to permit *complete* nozzle service work with lowest investment. Yet units are so advanced that they are a necessity for the modern Diesel service shop, or the O.E.M. Write or call today for complete information!

HARTRIDGE NOZZLE MICROSCOPE
Designed for quick, close inspection of all standard nozzle needle and body seat by reflected light. Eliminates time spent trying to recondition worthless nozzles and trial testing.

HARTRIDGE NOZZLE MULTICLEAN
Combines oil and air cleaning in a double flushing operation. Accommodates all nozzles from the small, popular type to large marine sizes. Illuminated magnifying glass for close inspection of spray holes.

HARTRIDGE NOZZLE RAPIDLAP
Provides a high-speed seat lapping process with Hartridge laps and lapping compound. Ideal for polishing precision injection parts. Dual spindles give two lapping speeds. Quick-action, key-less chucks. Swivels on base. Chuck head moves to three positions.

Exclusive Distributor in the U. S.

Diesel Injection SALES & SERVICE, INC.

1120 E. Brambleton Ave.
Norfolk, Va.
Phone MAdison 2-5691

Finer • Faster Markings

WITH IMPROVED ENGINEERED LETTERING TOOLS

DN

Spray it— STENCILS

Now—make each car a traveling billboard with colorful decorations that advertise your Corporate image and services wherever it goes.

Planned decorations are our business. With DEMP-NOCK Magnetized or Pressure Sensitive "SPRAY-IT" Stencils they are reproduced finer, faster, easier. Accurate and durable, this system includes trademarks, medallions, lettering, numerals—everything to make good decoration easy.

Color styling and designing available on a consultation basis.

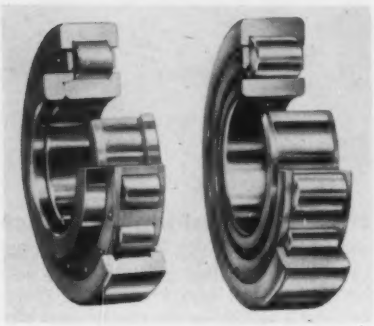
Write now for complete information.

THE DEMP-NOCK COMPANY
21433 Mound Road • Warren, Michigan
"Engineered Lettering Systems"

DEMP NOCK

(Continued from page 79)

fuel or combustion failure. The combustion chamber and jacket are air cooled. The generators are said to be in railway diesel-electric heating service in the United States and several foreign countries. *Clayton Manufacturing Co., Dept. RLC, P.O. Box 550, El Monte, Calif.*



Traction-Motor Bearings

The improved "Hi-Miler" commutator end bearing (left) and the pinion end bearing (right) feature "high-arc" cage contact, tapered flange, and a "micro-smooth" surface finish. The high-arc contact is said to improve lubrication of the cage, eliminate cage wedging between rollers, and cause the bearings to run smoother and at lower temperature. The tapered flange improves capacity for all thrust conditions and gives more effective lubrication and lower operating temperatures. With the micro-smooth surface finish, bearings run at lower temperatures and can be operated at high speeds without thinning of the lubricant. *SKF Industries, Inc., Dept. RLC, Front st. and Erie ave., Philadelphia 32, Pa.*

Freight Bracing System

Freight bracing systems to prevent in-transit damage include standard aluminum belt rails, "built-in" aluminum (illustrated), and steel arrangements. In the standard system the aluminum belt rails are secured to the side posts of a truck trailer. The rails are punched with a row of holes into which cross-members are fastened. They extend across the width of the truck. In the built-in aluminum system the belt rails replace regular side posts. These posts give support strength to walls and roof; receive cross-members to brace against loads, and give added interior width over ordinary trailer construction. Steel belt rails are used in the steel system which is used when weight is not a critical factor. These rails

NEW TRACTION MOTOR BRUSH GIVES

. . . regardless of operating duty

It's one thing when a new brush grade shows significantly longer life and improved commutation for one type of service.

It's remarkable when this same brush outperforms other brushes in *every* type of service!

But Stackpole Grade AC-35 traction motor brushes do just that. They have been tested on locomotives throughout the country for over two years—in freight and passenger duty, long and short hauls, mountainous and flat terrains.

Throughout the tests improvements in brush life using AC-35 averaged 10% to 25% above even the best "restricted duty" brushes previously used . . . and with equally gratifying reductions in commutator maintenance.

Based on brush costs-per-mile, commutator reconditioning costs, and possible elimination of duty restrictions, Stackpole Grade AC-35 offers a significant opportunity to keep diesel-electrics running . . .

profitably.

STACKPOLE

diesel-electric **BRUSHES**

STACKPOLE CARBON CO. St. Marys, Penna.

AAF AMER-kleen air filters do a better job at lower cost on engine intakes and carbodies

REPLACEABLE GLASS FIBER FILTERS PROVE SUPERIORITY IN RAILROAD SERVICE

On-the-job operation in locomotives has clearly demonstrated these three major competitive benefits of AMER-kleen air filters:

1. *LOWER INITIAL COST.* The cost of metal panel filters is at least 70% more than for AMER-kleen retaining frames.
2. *LOWER FILTER OPERATING COST.* It's far less expensive to replace AMER-kleen glass fiber media at regular intervals than to wash and re-oil metal filters.
3. *LOWER LOCOMOTIVE MAINTENANCE COSTS.* AMER-kleen allows far less dirt (about half that of metal filters) to get to—and into—your equipment.

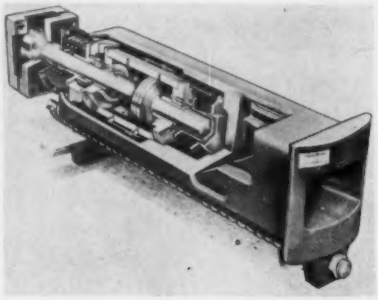
ONLY AAF MAKES ALL KINDS. AAF makes all three types of filters used in engine intake and carbody service—metal, oil bath and AMER-kleen. We *recommend* AMER-kleen, and we think you'll *demand* AMER-kleen when you know all the facts. Write for a free copy of AMER-kleen Bulletin 125. Address: J. K. Sparrow, Engine & Compressor Department, American Air Filter Company, Inc., 348 Central Avenue, Louisville, Kentucky.

See the Amer-kleen display at the Convention—booth 26

AAF American Air Filter

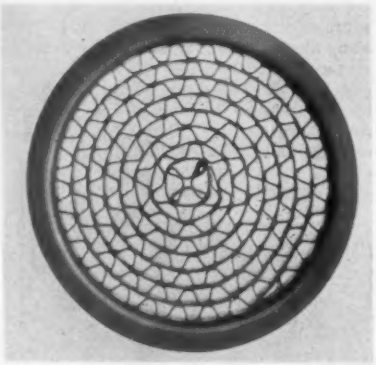
BETTER AIR IS OUR BUSINESS

have slotted grooves into which cross-member end fittings are fitted. *Sparton Corp., Dept. RLC, Jackson, Mich.*



Hydraulic Cushioning Device

The FreightMaster hydraulic cushioning device can be installed in the draft-sill area on old and new freight cars. The device employs a double-action energy absorbing principle based on conversion of impact shock into controlled directional movement and offers specific weight and cost advantages for specialized and standard freight cars. AAR conditional approval has been assigned the FreightMaster, which already has been used extensively on several major roads. *FreightMaster, a division of Halliburton Co., Dept. RLC, Fort Worth, Tex.*



Parts Catcher

A parts catcher, applicable to most diesel engines, can be installed in exhaust manifolds to prevent damage to turbo-chargers from broken engine parts, such as valves and pistons. Its use is also said to improve air-flow characteristics, helping boost turbocharger pressure. The catcher is designed of nickel-bonded, heat-resistant, stainless-steel alloys, and is ceramic insulated.

Complete stainless-steel manifolds are also available for General Electric 8-cylinder; Baldwin 8-cylinder, and Alco 244 12-cylinder diesel engines. *Stainless Steel Products, Inc., Dept. RLC, 2980 N. San Fernando Blvd., Burbank, Calif.*

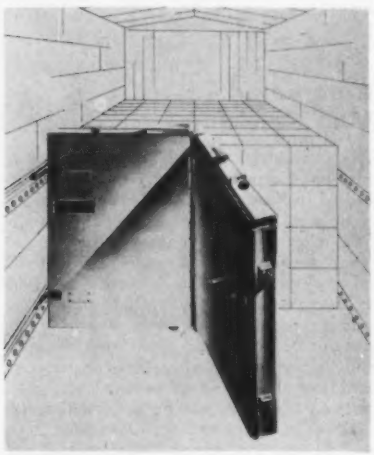
Crankshaft Refinishing

Industrial hard chrome plating and associated refinishing processes make it possible to recondition damaged and worn engine and

compressor crankshafts, camshafts, and similar locomotive components. Hard chrome plate, actually a layer of chromium metal bonded metallurgically with the base metal, is said to have high resistance to wear, low frictional characteristics, corrosion resistance, and good lubricating qualities. It is said that chrome-plated crankshafts serve longer than original shafts and the reconditioning process costs only a fraction of the price of a new shaft. Shafts are restored to new shaft condition by straightening, peening, plating, grinding, and balancing. *Chrome Crankshaft Co. of Illinois, Dept. RLC, 6010 S. New England ave., Chicago 38.*

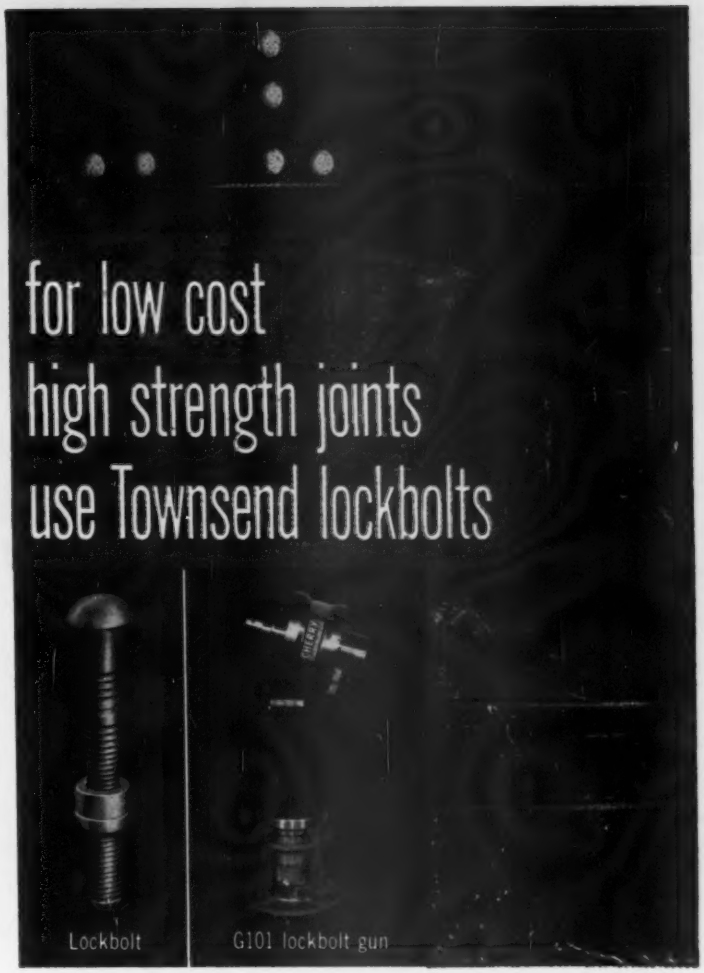
Speed Recorder and Indicator

The DPC 85 recorder and DSC 85 indicator, which register 0-85 mph, have been added to the 0-75, 10-90, 10-100 and 10-120 Barco line. Another addition is an instrument glow light which provides an adjustment for regulating the light on the recorder dial to suit conditions. A bull's-eye oil level gage is now applied on the front of all speed recorders and indicators. *Barco Manufacturing Co., Dept. RLC, 500-530 North Hough st., Harrington, Ill.*



Box-Car Bulkhead

The Rollok fold-a-way bulkheads for box cars operate basically on the same principle as those for gondolas. The 6-ft high bulkheads can be folded in half. Upper and lower T-hinged trolleys, each with two 3-in.



New car builders and repair shops get uniform, vibration-proof, secure joints at low installed cost with Townsend lockbolts.*

Townsend lockbolts are easy to install with a 2 or 3 man crew. Ordinary type fasteners require larger, more costly, highly specialized crews. Increased driving speed and the elimination of fitting-up operations step-up production. Worker fatigue is minimized.

A demonstration—in your office or on the production line—can be easily arranged. Our field engineer will demonstrate the practical and long lasting benefits of Townsend lockbolts. Write Townsend Company, Engineered Fasteners Division, P. O. Box 71-RR, Ellwood City, Pennsylvania.

*Licensed under Huck patents RE 22,792; 2,114,493; 2,527,307; 2,531,048; 2,531,049; and 2,754,703.

Townsend Company

ESTABLISHED 1916

Engineered Fasteners Division

ELLWOOD CITY • PENNSYLVANIA

TO CLEAN VITAL ENGINE PARTS FASTER, WITH LESS COST...

LIX IT!

You can clean vital engine parts faster with LIX Cleaners because they are specially compounded for removing tough, burned-on carbon, grit and grime. Soil soaks away with amazing speed... and less costly too, because LIX Cleaners last longer due to less-frequent changes. LIX Cleaners are safe to use—they're low in toxicity and are not a fire hazard.

Scraping and brushing are eliminated... LIX simply soaks away the dirt, and leaves no granular deposits... even reduces after-rusting.

In cleaning pistons, liners, lube oil coolers, fuel injectors, exterior surfaces... anything on the diesel... you'll be money ahead if you use a LIX Diesel Cleaner. Available both chlorinated and non-chlorinated, for spray or tank type use.

SEE FOR YOURSELF how **LIX** can help you save money. Write or call for a **LIX DEMONSTRATION** in your shop ... no obligation.

PRODUCTS OF RESEARCH

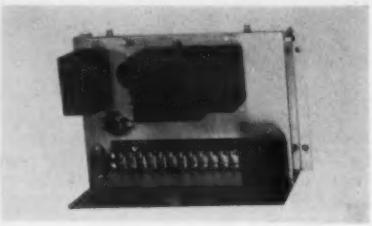
Address Department 10

THE Lix CORPORATION OF MISSOURI

WAREHOUSES AND OFFICES: 300 West 80th Street • Kansas City, Missouri
201 Railroad Avenue • Corona, California
82 Wall Street • New York, New York

(3076)

wheels with roller bearings, are fitted at one end of each bulkhead. Trolleys roll on 3-in., 9-lb structural channels fitted flush into the sides of the car. The bulkhead is locked on the rail by a formed U-channel welded onto the 3-in. channels. Positioning and locking can be handled by one man. *Youngstown Steel Car Corp., Dept. RLC, P.O. Box 268, Niles, Ohio.*



Temperature Controls

A solid state engine water temperature control system (above) for use on locomotive engine cooling systems utilizes magnetic amplication and transistorized circuitry. It has no moving parts and its operation is said to be maintenance free. The unit, which can be obtained for up to four fans, employs a thermistor probe sensing element.

A four-channel temperature control system using solid state devices is said to accurately control the interior temperature of refrigerator cars regardless of outside conditions. It utilizes a magnetic pre-amplifier, static inverter, transistorized power supply, and transistor switching circuits.

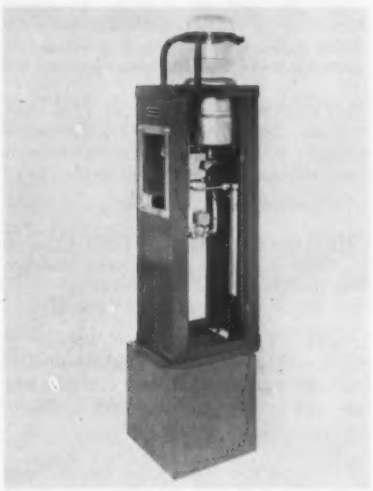
The solid state commuter car temperature control eliminates intermediary pilot relays and contains no moving parts. It enables temperature sensitive mercury tubes to switch heavy duty electrical contactors, controlling strip heaters, and is designed for easy interchangeability. *Vapor Heating Corp., Dept. RLC, 80 East Jackson Blvd., Chicago 4.*

Automated Mail Handling

The GE automated mail handling system can be designed, manufactured, and installed to meet varying requirements. It is completely integrated, providing a smooth flow of mail with a minimum of manual labor needed to handle and sort mail at railroad terminals. The conveyors are said to move mail from car door to car door well within prescribed time limits. It is also designed to receive mail from other sources and deliver it to storage cars. A pre-sort metering slide in combination with presort storage belts permits the handling of peaks of incoming mail. The uncoded peak load is stored on the storage belts and released to the sorting system when peaks have passed. The Directo-Matic control consists of transistorized static elements which control the air-operated loading hoppers and diverters. *General Electric Co., Industry Control Dept., Dept. RLC, Salem, Va.*

Wheel Slip Control

A pneumatic wheel slip control, which can be added to any locomotive air-brake equipment to control slip with no appreciable loss in tractive effort, operates in response to an electric signal from existing slip detection systems. The minimum brake application necessary to restore the speed of the pair of slipping wheels to normal wheel-rail speed is initiated very rapidly and then quickly released. The light brake application reconditions the treads of the wheels so that adhesion will be improved, reducing the possibility of repeated slips. The action occurs only on the unit with the slipping wheels. Power delivered to traction motors is reduced in the traditional manner only when the frequency and duration of re-occurring slips exceed the predetermined timing of a pneumatic timing circuit. Basic equipment to be added to the locomotive consists of a wheel slip controller, a double check valve, and two relay valves. *New York Air Brake Co., Dept. RLC, 230 Park ave., New York 17.*



Locomotive Water Cooler

The Vortacool, a water cooler, has no moving parts. It operates completely on compressed air and needs only 2 to 6 cu ft of air per min. It is adaptable to the compressor of a locomotive that reaches a low output of 100 cu ft of air a min when engine is idling. Temperature can be regulated from 27 deg below zero to 400 deg above. The technique is under study for possible use in mechanical reefers. *Cleveland Technical Center, Dept. RLC, Collinwood, Cleveland, Ohio.*

Transportation Insulation

PF-330T transportation insulation, after an extensive immersion, freezing and thawing test by Freuhauf Trailer Co., is said to have shown excellent slump resistance and thickness retention. After a 12-cycle MDT vibration resistance test covering a period of

WE AREN'T
AFRAID TO
STICK OUR
NECKS OUT
ON THIS
ONE
INTERNATIONAL
Cabooses
SHAVE MAINTENANCE
COSTS TO THE MINIMUM
It's a fact and many railroads have proved it. International Cabooses will outlast and outperform all others in terms of maintenance minimums. On top of this, they offer exclusive features contributing to greater crew safety and comfort. There is one big reason why. They are planned, engineered and built by caboose specialists. Want the details? Write International Car Division, 2485 Walden Avenue, Buffalo 25, N. Y.
INTERNATIONAL CAR DIVISION
A Subsidiary of Ryder System, Inc.

NEW Power Windshield Washer

- Automatically purges lines both before and after fluid application.
- Positive protection against freezing and clogging.
- Compressed air operated—engineered for heavy duty service.

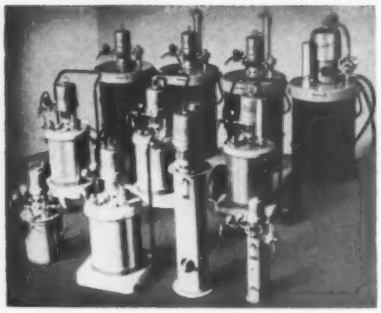
By the makers of famous AIR-PUSH Heavy Duty Windshield Wipers

Safety Starts with Seeing!
Sprague DEVICES, INC.
MICHIGAN CITY, INDIANA

Sprague Devices, Inc.
Michigan City, Indiana
Date_____
Please send me complete information on the new AIR-PUSH Power Windshield Washer.
Name_____
Company_____
Address_____
City_____ State_____

seven weeks, the insulation showed no sagging, loss of thickness, or disintegration, according to the manufacturer. *Owens-Corning Fiberglas Corp., Dept. RLC, Toledo 1, Ohio.*

Binks Airless Painting Outfit



Gray Airless Spray Equipment

Paint Spray Equipment

The illustrations for the Binks and Gray painting equipment were inadvertently transposed in our July and August issues. The Gray airless spray equipment is described on page 57 of the July issue; the Binks airless painting outfit, on page 10 of the August issue.

Personal Mention

(Continued from page 7)

engineer, general offices. A. A. RICHTER, engineer of mechanical equipment, office of mechanical engineer, appointed assistant superintendent, Como shops, succeeding Mr. Krohne.

Santa Fe.—*Topeka, Kan.:* H. N. CHASTAIN, appointed general assistant mechanical department. Formerly master mechanic at Argntine, Kan.. E. G. SANDERS, general motive power assistant, retired. L. N. PETTERSON, air brake and steam heat instructor, retired.

Seaboard Air Line.—*Savannah, Ga.:* J. R. BISSETT, general road foreman of engines, retired.

Southern.—*Birmingham, Ala.:* JOHN GERSON, JR., appointed master mechanic. Formerly master mechanic at Columbia, S. C. MURRAY C. PAYNE appointed road foreman of engines.

Supply Trade Notes

AMERICAN STEEL FOUNDRIES, TRANSPORTATION EQUIPMENT DIVISION.—*Gordon L. Kibbey,* sales engineer, appointed sales agent.

■

MOTOR COILS MANFACTURING CO.—*Carl F. Steinbrink* appointed consulting engineer. Mr. Steinbrink was general electrical foreman at Rock Island Silvis shops at the time of his retirement in April.

■

NATIONAL LOCK WASHER CO.—*Albert Schiffers, Jr.,* 332 S. Michigan Ave., Chicago 4, appointed sales representative in Illinois, Indiana, Iowa, Michigan, and Wisconsin.

■

RUSSELL, BURDSALL & WARD BOLT & NUT CO.—*Sintered Products Division* for manufacture or powder metal parts established.

■

CHICAGO PNEUMATIC TOOL CO.—*Norman Readman* elected president to succeed *Guy J. Coffey,* now chairman of the board and chief executive officer.

Eads Johnson, Jr.
American Brake Shoe

R. B. Miller
Chicago Pneumatic Tool

AMERICAN BRAKE SHOE CO.—*Eads Johnson,* Jr., named first vice-president, Railroad Products Division. Mr. Johnson formerly vice-president of sales for the division.

■

CHICAGO PNEUMATIC TOOL CO.—*R. B. Miller* appointed general sales manager, with headquarters at New York.

■

OAKITE PRODUCTS, INC.—*Roger R. Heroux* appointed New England division manager, succeeding *Robert P. Jones* who has been assigned to New York headquarters.

■

SKF INDUSTRIES.—Sales responsibility for railroad journal bearings transferred from regional sales offices to enlarged railway sales department. *G. M. Goodloe, R. G. Moore, R. A. Harwick,* and *W. H. Mowers* appointed railway field sales engineers. Messrs. Goodloe and Moore will be headquartered at Central sales regional office in Chicago. Mr. Harwick will serve Southeast territory from Philadelphia, Pa., and Mr. Mowers, Northeast territory from New York.

■

HUCK MANUFACTURING CO. — Regional offices opened at 576 Armour Circle, Atlanta, Ga.-*Wynn W. Hunt,* manager; 400 Delancy st., Newark, N. J.-*A. Joe Upton,* manager; 7452 N. Harlem ave., Chicago-*Allen R. Tenny,* manager; 7849 N. Lindbergh Blvd., Hazelwood, Mo.-*R. V. Clute,* manager.

OBITUARY

ORLIN H. CLARK, field manager of the railway division of Oakite Products, Inc., died of pneumonia on July 21.

PRR Brake Shop

(Continued from page 68)

plies the back cover assembly. The small parts involved in this assembly have been delivered to this station by the small-parts conveyor system after they have been cleaned. In addition to applying the complete back cover with a multiple spindle torque adjusted tool, this mechanic also gages the covers, straightens them when necessary, replaces the choke, and assembles the unit prior to its application to the body.

The assembled portion is now moved to one of the seven test racks. The rack operator goes through the prescribed test sequences. Some defects can be corrected without removing the portion from the test rack. When results indicate that this will not be sufficient, a collar on the conveyor carrier is moved to a position which indicates that this is a defective portion. A small colored magnet is applied to the body of the portion to indicate the nature of its defect. The conveyor system then operates to transfer this portion to a rework bench. Here two machinists correct the defects in the conventional manner, disassembling the portion to make necessary repairs.

Portions which have successfully passed the rack test continue on the conveyor to the shipping position. At this point, a multiple spindle wrench is used to apply the shipping cover, and the portion is properly stencilled and then transferred to one of the containers used for transportation to line points.

In addition to applying shipping covers, the machinist helper at this bench also operates an automatic strainer cleaning device. Strainers removed from the pipe brackets of cars come to the shop in the service-portion shipping cover. The automatic strainer-cleaning machine has a magazine holding a dozen strainers. A photoelectric cell on this magazine initiates the cleaning cycle. The cleaning device, itself, is a standard conventional unit.

Mechanization of many of the operations and control of conveyors necessitated the development of many specialized control devices. Each of the two production lines has seven electronic control units, nine photoelectric cells, and a large number of limit switches and time-delay relays.

THE ADLAKE MAN is lots of things to lots of people. To railroaders, he represents a century of service in supplying top quality windows, lamps, hardware, locks, relays, diaphragms and other products. A phone call, note or wire will bring the Adlake Man to your desk in a hurry, anxious to help in any way he can.

Adlake®

The Adams & Westlake Company, Elkhart, Indiana, Phone COngress 4-1141. Chicago Sales Office: 135 S. LaSalle St., Phone Financial 6-6232. New York Sales Office: 50 Church Street, Phone COurtland 7-0073.

A. Stucki Co.

Side Bearing Specialists

For

50

Years

1911 — 1961

Oliver Bldg.
Pittsburgh, Pa.

WANTED

Car Builders and Locomotive Cyclopedias and Dictionaries prior to 1935. Please state price, year, and condition of book. Write Box 11, RAILWAY LOCOMOTIVES & CARS, 30 Church Street, New York 7, New York.

FOR SALE

Railway Executive Business Car—excellent condition. For further details address Box 12, RAILWAY LOCOMOTIVES & CARS, 30 Church Street, New York 7, N. Y.

Looking for a job? ***Looking for a man?***

use this space to get
reliable leads, quicker results

EMPLOYMENT OPPORTUNITIES SECTION
RAILWAY LOCOMOTIVES & CARS
30 Church St., New York 7, N. Y.

ADVERTISERS IN THIS ISSUE

Adams & Westlake Co. 87
Albertson & Company, Inc. 16
American Air Filter Co., Inc. 82
American Brake Shoe, Railroad Products Div. . . 34, 35
American Steel Foundries 50, 51
Archer-Daniels-Midland Co. 63
Armco Steel Corp. . . . . IFC

Buckeye Steel Castings Company 3

Callaway Products, Inc. 4
Chicago Pneumatic Tool Co. 44
Chisholm Moore Hoist Div., Columbus Mc Kinnon Chain Corporation 76

Demp-Nock Company 80
Diesel Injection Sales & Service, Inc. 80

Eagle Manufacturing Co. 76
Edgewater Steel Co. 67
Electro-Motive Div., General Motors Corp. . . . 56, 57
Ellcon-National, Inc. 45
Ex-Cello Corp. 61

Frampton & Co., D. B., Doweloc Division 70
Frost Paint & Oil Corp. 80

The Gray Company 77
Griffin Wheel Co. 20, 21

Holland Company 11

International Car Division 85

LIX Corporation 84

Mac Lean-Fogg Lock Nut Co. 64
Magnus Chemical Co. 75
Magnus Metal Corporation 36, 37
Morrison International Corp., International Car Division 85
Motor Coils Manufacturing Co. . . . . BC
Motor Wheel Corporation 78

Nalco Chemical Co. 6
National Carbon Co., Div. of Union Carbide Corporation 29, 30
National Castings Co. 48, 49

Oakite Products, Inc. 12

Pettibone Mulliken Corp. 15
Pullman-Standard Division of Pullman, Inc. . . . 18, 19

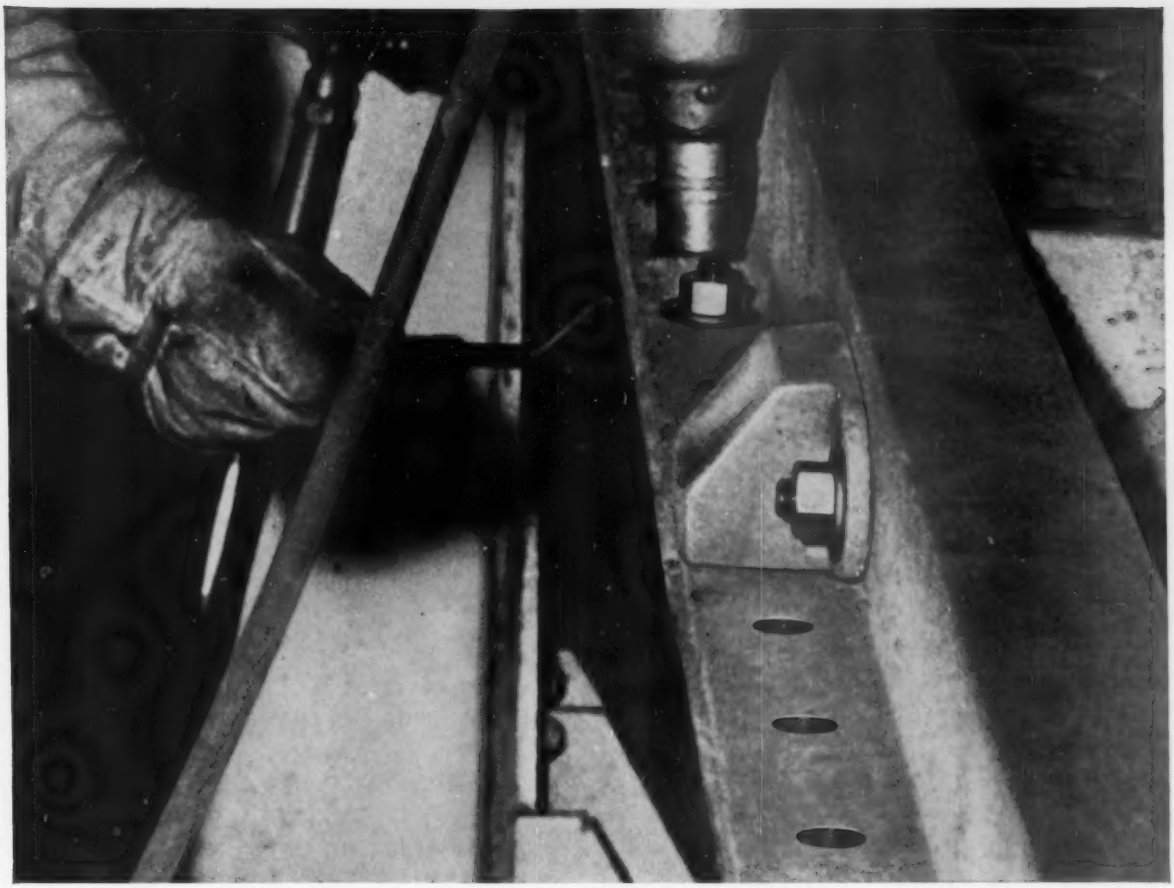
Railroad Friction Products Corporation 58, 59, 72, 73
Russell, Burdsall & Ward Bolt & Nut Co. . . . . IBC

Screw & Bolt Corp. of America 54
SKF Industries, Inc. 66
Sinclair Refining Co. 32, 33
Southland Mfg. Co., Inc. 55
Spectrochemical Laboratories, Inc. 79
Sprague Devices, Inc. 86
Stackpole Carbon Co. 81
A. Stucki Company 88

Texaco, Inc. 39, 40, 41
Timken Roller Bearing Co. 46, 47
Townsend Company 83

Vascoloy-Ramet Corp. 69

Westinghouse Air Brake Co. 58, 59, 72, 73
Wine Railway Appliances Co., Unitcast Corp. . . . 9
Wix Corporation 71
Wyandotte Chemicals Corp., J. B. Ford Division . . 22



New idea in car assembly saves shop time–speeds repairs

No matter *how* you assemble cars, you first have to pull the various members together with "fitting-up" bolts. That's where this new idea comes in:

Use RB&W High Strength Bolts for fitting up . . . *and leave them in place permanently.* This cuts idle time of riveting crews.

Now standard procedure prior to riveting certain types of cars in several roads' car shops, this idea eliminates extra operations, saves car assembly time, saves money. These bolts pull the steel together so much tighter, that the riveting job improves, too.

You can do this with high strength bolts because they are stronger than the rivets they replace. All in all, they make a stronger connection that stays tight despite constant rolling vibration and impact.

Of course, by using high strength bolts exclusively at *every* problem area where rivet failure happens too frequently, you stand to gain even more. For example: Bolted hopper cars stay longer on the road. Gondola cars are reinforced much faster. Accessory equipment is more securely mounted. Repairs can be made faster, easier.

RB&W has pioneered in this development for railroad car building and rebuilding, and offers engineering assistance in *where* to use the bolts, and how to install them properly. Consult us for specific details . . . or write for this bulletin. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

Plants at: Port Chester, N. Y.; Corapolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco.

The preferred source for high strength bolts . . .

R B & W

117th year

RALPH C. LAURO
President

WALTER F. FAUERBACH
Vice-President, Sales

EDWARD KANEWSKI
Vice-President, Manufacturing

MARVIN FROMM
Chief Engineer

EDWARD P. WILLIAMS
Vice-President, Treasurer

FRANK M. BOSART
District Manager

ROBERT E. LINK
Service Engineer

CARL F. STEINBRINK
Methods-Procedures Manager

ALFRED P. HAMILTON
Emporium Plant Superintendent

PITTSBURGH PLANT

201 YEARS OF EXPERIENCE!*

Today, Motor Coils Manufacturing stands in the front rank of the electric motor insulation industry. A major insulation advance—the Epoxi-Mica® Insulation System—was pioneered and has eliminated the cause of much of the electrical breakdowns in locomotive traction motors. Major railroads report annual savings of millions of dollars in repair costs and through extended life.

Behind Motor Coils' dramatic insulation breakthrough is an aggressive, dedicated group of engineers, technicians, mechanical and service people.

In the beginning, youthful probing and research took basic science and applied it to develop a new, more practical insulation system. Then, well-seasoned traction motor people added superior mechanical experience.

The Result? An aggressive, quality-conscious company where constant research, development and continuous improvement is dominant. An organization whose every effort is aimed at giving you longer traction motor life at lower cost.

If you haven't looked into the possibility of improvement and cost savings with your traction motor problems, call Motor Coils now.

*Cumulative experience. Railroad industry, executives shown only.

EMPORIUM PLANT

MCM

MOTOR COILS

manufacturing company

32nd Street, Pittsburgh 1, Pennsylvania • GRant 1-0677
Emporium, Pa. • IN CANADA: 639 St. Remi St., Montreal